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ADVANCED MANAGEMENT

Quarterly Journal

*The Society for the
Advancement of Management*

The Control Unit: Newest Techniques for Controlling
Decentralized Operations

Need for Scientific Study of Human Relations in Industry

Labor Management Relations and the Public Interest

Trade Unionists and Scientific Management

Developing Progressive Management

The Ultimate Science

June, 1947

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Comment

WORDS can have an unfortunate way of limiting how we look at reality. This is a special difficulty with abstract words. And in matters of human relations, for example, we can be badly led astray if the words we use do not conform to the living facts. When executives indulge in observations about "capital" and "labor" or about the "working class," when labor leaders sound off about the "class struggle," . . . the likelihood is that attitudes behind the words are not close to the ongoing activities of the shop, and therefore are not dealing with them to best effect.

Even to insist that there has to be a "human" view of the social relations of individuals at work, that there has to be a direct and close-up association of person with person and of group with group, can leave the mind of the manager still abstracted and remote unless he does something about it at first hand with his own associates.

It is becoming usual to say that executives have wisely to spend more time in the human contacts of labor relations. . . . both in the shop in leadership of the supervisory staff, and in continuing friendly associations with the labor leaders of their industry. We are coming to see that there is no substitute for face to face confronting of managers with managed in a sustained, natural, and explicit way.

It is not to be a matter of friendliness for sentiment's sake. The closer, freer and more spontaneous association which managers have to form with their staffs is the only way we know for the realities of operation to be vividly in the managerial mind.

And those realities of operation have greatly to do with the thinking, feeling, and morale of the men . . . all the men . . . on the payroll. A phrase relatively new in current usage is "group dynamics." The phrase is rightly used to connote the effort to understand and to work with the creative motives of men in the necessary interplay of their hour by hour labors and human dealings. The search for "what makes men tick" is not necessarily a new fact. Psychological approaches to labor relations have been in the works for twenty years. But there is a realism, an experimental curiosity, a systematizing of thinking,

planning and acting to advance happier human dealings both personal and group, which those who are advancing the group dynamic approach are responsible for in a most helpful way.

The Society for the Psychological Study of Social Issues, as its name suggests, is usefully oriented in this direction. So, too, is the group at M.I.T., which constitutes the Research Center for Group Dynamics. So, too, are the men at Yale University who compose the Labor and Management Centers; and the inter-departmental staff at the University of Chicago which calls itself the Industrial Relations Center. There is also the Society for Applied Anthropology which publishes the journal, "Applied Anthropology."

The researches and findings of such agencies surely have great promise for a more realistic grappling with labor relations by everyone willing to get beyond old stereotypes of words and deeds. They are articulating both for managers and for labor leaders a way of viewing the problems they confront which is free of preconceptions, is straight-forward, is organic to specific situations, problems and needs, and is basically democratic in essence.

The article by Professor Bakke in this issue of *ADVANCED MANAGEMENT* is a good exhibit in evidence. And my own article in the present issue moves in the same area of thinking.

A new magazine, "Human Relations," a joint project of British and American students, is further evidence of a widened activity of research and formulation in this fruitful area.¹

All that I am here trying to suggest is that human problems of management have to be approached with attitudes that grow out of first hand knowledge. And that knowledge is in a more precise and practical way than ever before now being organized and analyzed. There is a human dynamism in the relations of managers to managers with which we all have to come to grips, and which in the form of consultation and shared participation can advance us far beyond attitudes of strife to those of cooperation.

ORDWAY TEAD

¹ For further information write to Miss Dorothy Southmayd, Research Center for Group Dynamics, M.I.T., Cambridge, Massachusetts.

Labor Management Relations and the Public Interest

By ORDWAY TEAD

Editor of Economics Books, Harper and Brothers, New York

THOSE who, like myself, view with some apprehension the effort to assure improved industrial relations exclusively or largely through new Federal legislation, are naturally called upon to offer effective alternatives. This discussion is such an effort. It is frankly an excursion into a public emphasis and approach to labor relations rather than into their operating details. It is an attempt to consider what the core of the problem is in the great body of American industry, and to show that our need for new legislation has to be seen as subordinate to our need for a new and wider loyalty to and practice of what we already know. For the knowledge already available to managers seems to me to exceed their disposition to draw upon it. And to put the issues in a more persuasive setting is here my effort.

Public sentiment can be valuable in bringing about definition and support for what people decide to be a public interest. And surely the acknowledgement of peace and productivity as here set forth will have to do with operative effectiveness no less than a public good will. Over and above and beyond the struggle hastily to write new legislation has to be the disposition of the parties at interest to agree to agree.

I have just been reading a fascinating pamphlet entitled "Team Work in Action" having to do with the collective bargaining experience of the Howard Smith Paper Mills, Ltd. The following is a clause from the collective agreement of this company with two regular unions.

" . . . in the mutual interest of the employer and employee to provide for the operation of the plant of the Company under methods which will further to the fullest extent, the safety and welfare of the employees and economy of operations, quality and quantity of output, cleanliness of plant and protection of property. It is recognized by this agreement to be the duty of the Company and the employee members of the signatory Unions to cooperate fully, individually and collectively, for the advancement of said conditions."

Fortunately the spirit of this clause is given practical effect through the activities of a number of joint bodies which have titles, the very names of which

readily suggest the extent of genuine cooperative activity on vital problems. This agreement with the union is furthered by the following joint committees: A Mutual Interest Board; Labor-Management Production Committee, Safety and Accident Prevention Committee; Suggestion Box Committee; Job Analysis Cooperation; A Cafeteria Committee.

At the Industrial Relations Center of the University of Chicago I was recently presented with a pamphlet entitled "From Conflict to Cooperation." It described vividly and persuasively the experience of a Chicago Company in dealings with its unionized employees which had resulted in marked improvement in those relations due to sincere, intelligent and carefully organized relationships.¹

Those who have seen the volume entitled "Dynamics of Industrial Democracy" by Golden and Ruttenberg (Harper & Bros. 1942) will recall that this volume recounts an impressive number of collective agreements under which marked improvements and economies in production have taken place and a common understanding and goodwill have been vastly increased.

These are only sample recitals designed to establish the general point that in voluntary collective bargaining today where certain favorable conditions are observed, highly salutary results have obtained. These conditions are, briefly, that collective bargaining is taken by both sides as an assured and continuing reality; that the face to face dealings among those involved takes place on a sincere and friendly basis; that there is organized cooperation between the parties to improve production and lower costs; and finally that such efforts are given specific effect by the creation of joint collaborative bodies which undertake the necessary technical work. Where such conditions prevail the operation is going forward, other things being equal, in what we may fairly call the public interest.

¹ See also the instance supplied in "Conflict and Cooperation in Industry" which is the February 1946 number of THE JOURNAL OF SOCIAL ISSUES. See also LIFE MAGAZINE, December 23, 1946, "Every Man a Capitalist" by John Chamberlain.

Difficulties Not New

Let me next call attention to the fact that the difficulties we are considering are not essentially new in our economy. Labor problems and labor tensions have been with us for a century. It is true, however, that the period of recovery since World War II has had its inevitable added difficulties and strains. It is essential that we visualize the seriousness of the readjustments required on both sides with reductions of hours from 70 to 40 and with the consequent readjustment in rates of pay which had to ensue. But this reconversion period, if sympathetically understood, should not become an occasion for discouragement or despair. Our knowledge of the elements of the problem is more intimate than ever, and when all is said and done this period of transition has been coped with far more smoothly than most people anticipated.

There is, however, one special aspect of the problem coming increasingly to the fore which does give rise to profound public concern. I refer to the possibility today of relatively small groups of workers being able, because of our dependence upon technological advances, to tie up and bring to a complete stoppage the normal economic activities of whole communities and even in some cases of the entire nation. Recent examples of this threat to the public interest are too numerous to need recital. But they are ominous in the disclosure they make of a shifting in the balance of power among economic groups which has not yet been attended by as full a sense of public responsibility as is now seen to be essential. As has been well said, the crucial conflicts in our economy do not center around an interpretation of the existing rules under which joint action shall occur but they center about progressive redefinition about which those rules shall be.

In other words we are urgently faced today with the consideration as to how both unions and employers, able as they are to exercise crucial economic power over the sustained operation of our economy, shall from the public's point of view be made to realize and give effect to an adequate sense of public responsibility. It is our anxiety about the solution of this problem which is of course the reason for current congressional agitation for new legislation in this whole area. The right to strike, for example, may properly remain as a theoretical right even in those situations where a strike would paralyze our normal life. But the realistic fact is that in such situations the act of striking may well become a social tragedy and give rise to social anarchy. Surely where such a dilemma is present the problem, whether it be legis-

lative or otherwise, is one which has to be dispassionately viewed in a fresh light by labor leaders no less than by the public in general.

Such then is the central issue in labor-management relations confronting us today. And frankly the electorate of our country is not as clear as we might wish either as to its approach to the problem or as to proposals for its solution.

Hence, it is important to spell out a number of assumptions to which it is earnestly to be desired that wide agreement be assured. The assumptions that I shall make are: first, that there is a public interest in the conduct of labor-management relations; second, that this public interest has a primacy over the lesser group interests involved; third, that this public interest has to be defined; and fourth, that it has to be given practical effect by a variety of measures in part legislative and in part voluntaristic.

The effort to state the nature of a public interest in these matters has, it seems to me, to be in such terms as the following: there has to be wide assurance of personal freedom; there has to be reasonable assurance that the ends suggested by the words sufficiency, security and status are assured; there has to be assurance of the health, the safety and the general welfare of the overall membership of our community. Finally, I venture that the public interest in the great majority of cases has to be in terms of the advancing of conditions under which in corporate activity there can result a voluntary and peaceful pursuit of defensible common aims. And that there are, or can be, such common aims I propose presently to make explicit.

Group Relations and Common Aims

In order then to approach our problem in the broadest possible fashion I propose next to raise the question as to whether in our society we do in fact find in existence examples of group relations where there is a voluntary and peaceful pursuit of defensible common aims. What are typical instances away from the economic arena in which we see groups of people moved to act together for cooperative purposes? It would seem that analysis of such instances might lead us far along the road of an understanding approach to the public interest aspects of labor relations. Indeed such instances should help us to gather some important clue as to the extent to which the approach to our problem in industry is wisely a legal one or more wisely a voluntary approach.

Under favorable conditions the simple and commonplace reality of a family effort to agree together on

some problem such as buying a house or sending a child to college or deciding where to spend a vacation, reminds us of the conditions necessary for the process of conferring to reach an amicable conclusion. And I suggest that such family conferences succeed as there is among the members full understanding of the elements of the problem, full participation in the discussion by the responsible members, an atmosphere of affectionate regard animating the thinking of each, and finally an underlying loyalty to the family as such. To me these words "understanding," "participation," "affection" and "loyalty" are not without their suggestive connotations for us.

Let me next consider what the conditions are under which a football team comes to successful activity. There is a most careful selection of members of the team. The coach is the overall director with the captain as the morale officer and the quarterback as the immediate supervisor; the good physical condition of each player is assured by a training table; good equipment is provided; each player must be well versed in the rules of the game; there has to be enough but not too much practice—which is training; the group is trained to play as a team without too much emphasis on *prima donnas*. For reasons of strategy and morale the members of course know the score; at frequent intervals *the entire team goes into a huddle* in order to be sure that every member understands the plays; and finally the members of the team win wider recognition by the right to wear the letter of their institution.

Certain important conditions are satisfied in this football illustration. The members of the team know in common what they want; they know how to get it; and they know the benefits which accrue to them from the effort.

Finally, look with me at what in the political world takes place to make the operation of our Congress as effective as it is. The conditions which we satisfy in Congressional operation are these: we define and delimit the over-all constituency; we identify on a geographical basis the interests to be represented, namely the several states; we provide explicit representation of these vital interests; we provide a formal occasion for their conferring; we try to arm the conference with a full body of relevant facts upon contentious issues; the leaders are hopefully pushing the members towards agreement on program; legislation is eventually passed and tried out in the light of which there is evaluation of success and if necessary amendment of the law.

In short, whether we look at a family, at a sports activity, or at politics—and other illustrations might be added—we find common factors which are prevalent and which are required to assure a successful outcome. These factors have to do with organized relationships, with common understanding, with experience of shared participation, with beneficial results accruing from the outcome. When decisions are reached out of such processes of shared deliberation and action, those decisions become sound, practical judgments if they conform to certain requirements. Judgments out of joint conference are practically successful when they are appealing to all, inclusive of the interests of all, integrative of the several points of view represented, cooperative in the process of shared thinking, and held tentatively and experimentally as to the outcome anticipated.

Again, where the process of shared thinking goes forward successfully there has to be a general sense of approximately equal status and respect, of equal responsibility and of equal power. These become psychologically (and in the world of industry economically) the price of the assurance of attitudes out from which can come agreements. I have referred above to the problem of developing in various groups an adequate sense of popular responsibility. Here again we should by this time have learned that the price for having groups of people responsible is that they actually share in the carrying out of responsibility. The alternatives here are inexorable, and they are three. In matters of group interrelation, such as we see in labor-management relations, there can be (1) compulsion by domination; (2) resort to violence; or (3) agreement through cooperative discussion. And even where there is resort to violence, there is no resumption of joint activity short of eventual cooperative discussion.

What relation the foregoing analysis has to the conduct of labor relations is the question which next requires answer. My own contention is, of course, that the illumination about our present problem of labor and management to be drawn from these several instances is great, is informing, and goes far to show us the operating meaning of a public interest in industrial affairs. For what we have to consider in labor relations are questions both of attitude, of purpose, of understanding and of organized methods which will enable us to transcend undemocratic processes of compulsion, the anarchistic manifestation of violence and move us to true cooperation.

Aims May Be Shaped

The next question, therefore, may well be: can there be some common purposes which it is reasonable to expect that both management and labor can and should espouse? Surely the answer here is clear that the following several aims may wisely and safely be shared in common: that there shall be continuous operation to enable security of employment to be assured; harmonious internal human relationships; the achieving of low costs, fair prices and opportunity for technical advance; that there shall be some assurance of approval for good work and of personal growth over the years; that there shall be satisfactions out of group experience; that there shall be some shared financial stake in good results and that there should be a reasonable profitable operation over-all to assure continuity and justifiable expansion.

It is not idealistic to say that respecting all of these aims, an informed relationship between the workers and the management could lead to substantial sentiments of agreement and common efforts toward realizing these aims. Moreover, that all of this should take place is itself a desirable public and community outcome. Indeed, to make sure that common aims are defined, are understood and are worked toward, becomes of itself, as I have said, a primary public interest. This is true even though the assurance that such effort should take place has in practice to occur in each individual corporate setting.

In the next place, since there have to be organized and structural relationships to implement the working out of common aims, it is important to specify some of the actual procedures here. These desirably occur at the level of the department and the shop, at the level of the company as a whole with the union or unions involved, and occasionally at the level of the region or even of the nation as a whole in an industry-wide agreement.

As I tried to suggest in my introductory illustrations the grass roots of success of joint relations are to be found in the dealings which occur centering around the individual job and the individual department on matters of job specifications, wage classifications, and joint efforts at improved production along the lines of the usual work of labor-management production committees. Unless there is wise cooperative handling of these issues there is always danger that the collective bargaining will be a mere haggling over wage rates and not be a constructive force within the plant.

It is usually at the level of the company as a whole that the collective agreement itself would be negoti-

ated. And we know today clearly what provisions are wisely included in a good collective agreement and we know that such wisely drawn agreements are essential if the outcomes for both sides are to be satisfactory. And it should go without saying that in such determinations there has to be reasonable uniformity in the terms of employment agreed upon as among competing companies in the same industry.

One further important factor here deserves brief mention. I refer to the difficult problem of trying to assure that the rank and file of workers are brought to feel that they do in fact have some explicit stake in the financial outcome of operations. We are in a frankly exploratory area here where no general prescriptions can be offered. But I would at least like to point out that it is at this point that it becomes essential in a true public interest that thoughtful consideration be given to such matters as sickness pay, dismissal pay, wages more fully regularized throughout the year, wage incentives, and the consideration of some type of profit annual bonus sharing or of employee stock ownership. I remind you that there is a considerable body of experience in all of these directions so that the problem is less one of discovering practical methods for sharing a stake in the outcome than it is of a favorable disposition so to do.

Management's Attitude Crucial Factor

This brings us to a point which in all honesty cannot be left unsaid, namely that in all of these matters the attitude and the disposition of management *to take the initiative* is a crucially determining factor. I have already affirmed that we are greatly in need of a wider and deeper sense of union responsibility in these matters and this cannot be insisted upon too vehemently. But in our kind of an economic system the fact still remains that what the company will do as a matter of policy and how far it will go in the sharing of knowledge, of discussion and of financial reward rests, in the last analysis, upon managerial initiative.

I recognize that I have not elaborated as to some of the most heated areas of present day controversy. I would not have it thought that I am attempting to ignore or to oversimplify the issues. For it is true that there is as yet no consensus in our national community regarding our handling of such issues as the closed shop, the foreman's union, the communist led union, the administration of employer-supported "welfare funds." For myself, I gravely doubt, just because of the contentious character of these issues,

whether any legislation regarding them would be productive of more peaceful or more just arrangements. Peace and justice in these matters will grow far more out of clarification and consensus of general sentiment than they will out of legislative efforts to make legislative prohibitions which are both of doubtful constitutionality and still of doubtful practical desirability to large numbers of people.

Nevertheless any nation is still left with the problem of those relatively few industries in which a cessation of work leads inevitably to a paralyzing of the working of our economy. It would seem to me that it is now possible to make some definition, presumably in law, that there are certain occupations and industries directly affected with the public interest. And where such industries are involved in labor controversies it might well be desirable to have the appropriate head public official—the president, the governor, or the mayor—authorize and declare that a state of public emergency exists. And in such cases a definite body of requirements might legitimately be set forth in law which, while protecting the rights of all involved, would keep operation assured and would therefore keep the public interest paramount.

For example, the provision of a waiting period, the provision that in such public industries those who leave work have resigned from their positions and given up existing rights; a provision that such workers are not entitled to strike benefits—procedures of this sort coupled with explicit provisions for preferential treatment in these public industries of the workers as compared with workers in competitive industries—all this is surely worthy of the most careful consideration. But I would offer the caution that whatever new legislation we may devise in this area, the efforts to assure that people stay at work have to be by such indirect methods and not by flat compulsions. It cannot be too often said that in our kind of society it is impossible by law to compel people to go to or to stay at their respective employments.

Finally, as a means of constructive activity and programming at the level of the individual community

I must make mention of the conspicuous record of success in a community attack upon the problem such as we see in Toledo, Ohio. Here, under local statute, we find an instrument of extraordinary mediative power in a labor-management-citizens committee of eighteen which has acted with remarkable effectiveness to anticipate open breeches between employers and employees. I commend a study of this whole effort as a helpful example of how an entire community can address itself to improved labor relations in a practical way.

In conclusion, I have been trying to set forth my conviction that in matters of labor-management relation the public interest is best served by our trying in every way to assure that in individual situations workers through their unions and managements deal voluntarily and intelligently together. Deeply of the essence of success here is the attitude of sweet reasonableness and of toleration for organization on the other side which has to characterize successful joint dealing. There has, I have indicated, to be clear sense at once of greater management initiative and of fuller union responsibility. If the right to strike is not to be legislated against, which would be a doubtful prescription, then there must be clear recognition on the part of the organized workers that the act of striking would be fatal.

The point which I am trying to emphasize as the basis of a wise public approach, is that we must not only tolerate but encourage the development of what may fairly be called a constitutional government in our industrial life. For it is in the direction of a strengthening of the wise operation of such orderly joint procedures that the hope of good and productive democratic outcomes lies. I have deliberately focused attention on the voluntary aspect of the needed program. I have done this because I believe that in this direction is to be found the peaceful and productive approach in all save a very few industries. Hence I conclude in the words of St. Paul, "Let us now, therefore, follow after the things which make for peace."

The Ultimate Science

By REGINALD E. GILLMOR

Vice-President Sperry Corporation

(Mr. Gillmor's article is reprinted through the courtesy of the Department of Business and Engineering Administration, Massachusetts Institute of Technology)

THE science of which I speak has no name although it has occupied men's thoughts since the dawn of history. It is not yet a true science although everything that has been done in all the sciences, arts and philosophies has contributed to it. Its objective is order: order among men; order which will permit their free co-operation and the release and utilization of all their varied talents and skills; order which will make possible the realization of the great potentialities for good that their progress toward order has already created, potentialities that will be multiplied beyond present comprehension by the attainment of higher degrees of order.

The instruments of this potential science of order are now known by such vague and unsatisfactory terms as government, management, organization and administration. Administration is the broadest of these terms and can therefore be used to include all the others. It is the more suitable because its origin implies that it should be a ministry to bring order into the relations of man. The purpose of this paper is to indicate: first, what that ministry now is; second, the probability of its evolution into a science of order; and, third, the general character that such a science might ultimately have.

Scope of Administration

In its broadest sense, administration may be said to include: the determination and expression of the objectives of the group with which it is concerned; the evolution, execution and control of plans for attaining those objectives; the design of the organization structures which determine the relationships between the various members of the group; the selection, measurement, placement and training of people for the organization; the development and application of objective criteria for judging the performance of the group, collectively and individually, and of incentives for encouraging and rewarding their performance; the co-ordination and unification of the group in the attainment of its objectives; the development and maintenance of the ethics, spirit and morale of the members and the identification of their individual

aspirations with the aspirations of the group; the establishment of co-operation with other groups. In brief, administration is that vitally important social skill which determines most of the complex, political, social and economic relationships between people in the fulfillment of their wants, and is, therefore, the transcendent instrument for maintaining order and bringing progress toward higher order.

Administration is at present a very approximate art. It has no laws which have been verified by exact observation. The principles, or more correctly precepts, which have been evolved by students of the subject are not generally accepted or even known to the great majority of administrators. Society does not recognize any profession of administration or the desirability of establishing any qualifications for administrators. Because of some other powers or qualifications, men often arrive in important administrative positions with little knowledge of administrative principles and frequently without administrative experience or aptitude.

The two principal political ideologies into which the world is divided are primarily two ancient and mutually antagonistic administrative concepts. One, the centralization concept, based on the assumption that the governing organization is omniscient and that the best results will be obtained if all others obey its will. The other, or decentralized concept, based on the assumption that the governing organization is a ministry for providing order and that the best results come from the maximum of delegation and individual freedom. The American system is simply a way of making possible a complete delegation of responsibility to any individual who cares to accept it. Of course, the division between the centralized and decentralized concepts is not a sharp one; both concepts, as actually practiced, incorporate some of the opposing concepts. In American industry, for example, we still have some of the old despotism in management and some new despotism in the government of labor unions.

The lack of general agreement on administrative principles is comparable to the absence of agreement several hundred years ago on many of the laws of

physics. Extremely rapid progress has been made in physics by the technique of separating variables, measuring each with precision and proving all tenets by reproducible experiments. No corresponding technique is available for establishing a science of administration. For the time being progress must be accomplished by the slow process which someone has described as the inculcation of the incomprehensible into the ignorant by the incompetent.

It must not be forgotten, however, that all the sciences had their beginning in faith and imagination without proof, and that to those who held that faith, progress must have seemed very slow. Judged historically, the art of administration has progressed very rapidly and is now progressing with an increasing exponent. It seems to me that this progress is an extension of fundamental phenomena of progress which justify the prediction of an ultimate science of administration. For the purpose of gaining perspective I would like to sketch briefly those phenomena.

Analogy of the Living Cell

From our observations of the known universe we see that it tends toward higher and higher forms of order always contending with opposing tendencies toward disorder. Thus we see that the unorganized energy of space tends toward organized forms of energy which we call atoms. The atoms constitute an orderly array of the elements ranging in complexity from simple hydrogen to complex uranium. The atoms become grouped into orderly arrangements to create endless variety of inorganic molecules. Then comes the great step toward order represented by the living cell. Schrödinger* says that this can be explained only by imagining the chromosomes, which determine the character of all living cells, to be huge and exceedingly stable molecules which are masterpieces of highly differentiated order comparable to beautiful tapestries in which no stitch is like any other but each has order and significance—together and separately.

Every living thing, including the simplest of cells, has its daemon or determining tendency—its urge toward higher forms of order—which as Dr. Arthur E. Morgan of Antioch says, "impels each individual to full development according to its type." A principal result of that urge has been the co-operation of cells to insure their individual development and continuance—a co-operation which has evolved countless species of plants and animals ranging in complexity from simple colonies of like cells to co-operative

organizations of hundreds of billions of highly specialized cells—a range of life which tells a story of continuous striving toward higher and higher forms of co-operative order. Inherent in each of those co-operative organizations of cells is an administrative problem—very simple in the case of the colonies—extremely complex in the case of the higher animals. It became so complex in the case of the dinosaur that his top administration was geographically decentralized into three centers—a receptor center in the head, a locomotor center above the shoulders and another one at the rear end. Bert Taylor mentioned only two of these when he said,

*"Behold the mighty dinosaur,
Famous in prehistoric lore
Not only for his power and strength
But for his intellectual length.
You will observe from these remains
The creature had two sets of brains:
One in his head (the usual place),
The other at his spinal base;
Thus he could reason 'A priori'
As well as 'A posteriori.'"*

Etcetera

The evolution of the co-operative organizations of cells eventually resulted in early man—an organism with such a superior administration of his cells that he was able to draw rapidly ahead of competing organisms, many of whom had much greater physical strength, agility, mobility and perceptive acuity. One of the results of his superiority was his ability to see the value of co-operation with his fellow man. Our ancestors of a million years ago must have perceived that value very early. Their contemporary, Mr. Gigantopithecus, who received some publicity lately, was evidently much bigger and stronger but did not survive—probably because he just could not co-operate.

The evolution of the co-operation of man toward higher forms of order has followed a course similar to the evolution of cell co-operation; at first and for a long time simple colonies with small numbers and little if any specialization, then increasing specialization and larger and larger aggregations culminating in the great industries and nations of today. The reason for the co-operation of men has been the same as that for the cells—to insure the survival and development of the individual. And, as Dr. Morgan says, the aggregation as well as the individuals each have their daemon or inner urge compelling them

* "What is Life?" by Erwin Schrödinger. The Macmillan Company, New York.

to strive forever to realize their full inherent possibilities and not to rest until that urge toward higher order is satisfied.

An important difference between the evolution of the co-operation of the cells and the evolution of the co-operation of man is in the time factor. The evolution of the organization of cells was accomplished by the slow process of trial and error and the survival of the fittest. Man has within the past fifty thousand years developed a brain or upper administrative organization capable of reasoning, planning, creating and understanding himself and his environment to an amazing degree. With this brain he has taken charge of his own evolution and has carried it upward on a curve the exponent of which increases year by year. By exchange of knowledge and experience he has multiplied his intellectual power by factors of thousands. By the development of machines, instruments and sources of energy he has extended his physical power and perceptive acuity by factors of millions.

The administration of the co-operative relationships between man has also advanced but this advance has been very slow in comparison to the advances in the physical arts and sciences. Will administration ever be a science and if so what will be the general character of that science and its resultant effect on mankind? At this point I must ask you to look in the crystal ball with me. I feel somewhat like the astrologer and fortune teller whose client asked him why he had two holes in his crystal ball. "Oh," he said, "I go bowling with it on Tuesday nights." It is best to regard all crystal balls with scepticism, but nevertheless it is interesting and useful to try to see ahead, especially when we have some trend from the past that we can extrapolate to provide an indication of what the future might be.

Since the evolution of the administration of human co-operation is following approximately the same course as the natural evolution of cell administration which produced the genus *homo sapiens*, is it not logical to assume that mankind's external administrative technique will ultimately equal or surpass man's present internal administrative technique? If this is logical, as it seems to be, then we can get some idea of the future of the one by examining the existing administration of the other.

Homo Cells, Incorporated

To make the best of this extrapolation we must, for the moment, avoid thinking of man as a unit and

think of him as an organization with a population of two hundred billion individual entities—the living cells. We might call this organization Homo Cells, Incorporated, or Homo, Inc. for short. We must also disregard the disorders and limited existence of Homo, Inc. and the limited mobility of its individual cells. All is relative. Everything in the universe is subject to various kinds and degrees of disorder and limitation by reason of causes beyond its control. We are concerned solely with the science of administration of Homo Cells, Inc. as it is at this moment—for this is a science having laws which can be verified by exact observation—a science which may form the basis for an ultimate science of administration.

In studying the administration of Homo, Inc., let us start at the lowest level—the single cell. The first thing we observe is the extraordinary autonomy of this individual. It does its specialized job freely, willingly and with the minimum of communication from higher authority. It carries out in its own substance all of the chemical processes necessary to its existence, including some eight operations of construction and some five of discard. Its sole dependence is on the blood stream and tissue fluid which flow past it. It is difficult to imagine how any living thing could be made more autonomous than the individual cell in Homo, Inc.

Co-operation

Several hundred million years ago, before the cells had learned to co-operate, they lived individually separate lives immersed in the sea and dependent for their sustenance on the water flowing past them. They were free and independent but their mobility was limited and their lives precarious and, no doubt, extremely dull. Now in Homo, Inc. they still live in a fluid matrix but specialized co-operation precisely regulates that matrix to their needs. By their co-operation they have insured themselves a longer, more secure and, I think we can say, a much more interesting life. Some of them appear to have a very good time individually and together they frequently enjoy themselves tremendously—especially when young.

Communication

Another extraordinary fact about the individual cells is that each is equipped with a complete copy of all of the male and female chromosomes from which they originated. This means that each cell, from the time it joins the organization, is in possession of the entire pattern for the future develop-

ment and mature functioning of Homo, Inc. It also means that all cells speak the same inner language and can, therefore, respond instantly to any signal communicated to them from any part of the organization. Schrödinger compares these phenomena to the practice reputed to General Montgomery whose policy it was to have every soldier under his command meticulously informed as to all of his plans for important missions or campaigns such as those in North Africa.

Accumulation

Another interesting phenomenon at the individual cell level is that, for functions requiring varying numbers of cells to meet changing situations, a reserve of such cells is established. Thus, for example, a large number of red blood cells is normally held in reserve in the spleen and is called upon only when some extraordinary demands on Homo, Inc. make it necessary to supply oxygen and dispose of CO₂ at a very high rate. It reminds one of a line from Milton, "They also serve who only stand and wait."

Reserves of a great variety of materials needed by the individual cells, and the organization as a whole, are provided by an elaborate system of reservoirs and storage facilities distributed throughout the organization. Automatic controls regulate the expenditure and replenishment of those materials to insure constancy of supply. Dr. Walter B. Cannon in his interesting book, "The Wisdom of the Body," describes the amazing organization for insuring constancy of the blood with respect to its content of water, salt, sugar, proteins, fats and calcium. The only substance for which no reserve is carried is oxygen but provision is made for meeting heavy demands by excess pumping and exchange capacity in heart and lungs and by the reserves of red cells in the spleen. In every one of the eighteen absorbing chapters of Dr. Cannon's book, he calls attention to the gaps in man's knowledge of his internal mechanisms and their administration. The amazing fact, however, is that we should be given the power to know so much about what goes on within ourselves and how it came to be.

Specialization

The performance of the thousands of separate activities in Homo, Inc. requires multitudes of specialized cells. There are, for example, five kinds of white blood cells called lymphocytes and leucocytes, each serving a different purpose. The cells as a whole are

organized into three broad groups of activities: manufacturing operations, utilities and administration. Some of the principal manufacturing organizations are the Adrenals, the Pituitaries, the Pancreas, the Liver, the Gonads and the Thyroid. The utilities include beautifully organized systems for Respiration, Digestion, Circulation, Excretion, Communication (the Nervous System), Movement (the Muscular System) and Reproduction. The top administrative organization or central nervous system includes four levels: the Spinal Cord, the Brain Stem, the Paleo-Encephalon or old brain and the Neo-Encephalon or new brain. The words I have used to describe the administrative organization are, I understand, those now most frequently employed by psychiatrists.

Autonomy

The extraordinary autonomy which is manifest in the life of the individual cell is also manifest in the management of the manufacturing and utility organizations. Each system is as complete and as self-sufficient as it is possible to make it. Each carries on its activities with the minimum of communication with higher authority and responds instantly to any signals indicating a need for its services. All of the manufacturing units and utilities systems have potential capacities of from two to ten times the capacity normally required, thus insuring ample margins of safety in cases of emergency or injury.

The communication system is organized with thousands of lines conveying messages simultaneously from various centers to countless departments and individual cells. Under normal conditions responsibility is almost completely decentralized. Under emergencies central controls can issue orders directly to all of the organs whose co-operation is required to meet the emergency. The local and central controls are normally opposed to each other to insure against over-riding by the central control except in cases of emergency. When the central controls take charge there are no duplications of authority; the system has simply been rearranged to meet the emergency.

Delegation

In the four levels of top administration, the principle of maximum possible delegation which is so characteristic of Homo, Inc., is found again. The lowest executive level, the Spinal Cord, has the responsibility and commensurate authority for coordinating the completely automatic functions such as coughing, sneezing, winking and maintaining

posture—all quite involuntary and not involving any conscious direction. The next level or Brain Stem controls the semi-automatic functions such as breathing. The Paleo-Encephalon governs the more complex co-ordinations such as the mechanisms involved in walking, writing and speaking. All of these three levels, the Spinal Cord, the Brain Stem and the Paleo-Encephalon, could be called executive levels; they take care of all routine and many emergency activities requiring central direction and co-ordination of two or more manufacturing or utilities departments.

The three executive departments are never overburdened, not only because the responsibilities are equitably divided between them, but also because much of the co-ordination is accomplished by direct co-operation between the departments without the intervention of central authority. Every department of Homo, Inc. has definite criteria or standards for its correct performance. Through the communication system or the blood stream each can notify all co-operating departments whenever its performance is below standard and this is sufficient to cause these departments to take the steps necessary to aid the ill department in regaining normal performance. All departments of Homo, Inc. are fully aware of their interdependence. Each knows that to live it must perform its own functions correctly and co-operate with all other departments. Anti-social activities, such as cancer, are therefore comparatively rare.

Protection

The elements of the organization co-operate not only in the performance of all routine functions but in defense against any aggression which threatens to injure any part of the organization. Some familiar aspects of defensive activities are pain, sneezing, coughing, vomiting, winking, callouses, pus and blood clots. There are many internal aspects that are not so familiar, as, for example, the antibodies, the walling off of injured organs while they are being repaired and the high production of adrenalin and other essential materials that are necessary to the organization when danger appears imminent. There are still other interdepartmental protective measures which, as Dr. Cannon says, are mysteries.

In addition to providing for the smooth execution of all of its functions and for its defense against all enemies foreign and domestic, Homo, Inc. takes care that it is operated on a sound economic basis. So far as is possible all expenditures (energy outputs) are kept well within the revenues (energy inputs).

Normal Homo, Inc. in a normal environment is not only solvent but has ample reserves—a little too ample sometimes.

Administration

So far I have given an administrator's unscientific interpretation of the departmental and executive organization of Homo, Inc. Now we come to the top administrative level—the Neo-Encephalon or new brain. This is the center of what might be called the Departments for Statistics and Information, Planning, Creating, the Judiciary and the Will Power.

The infant, Homo, Inc., has little if any Neo-Encephalon. Its development in each Homo, Inc. seems to be a consequence of the inextricable interaction of inherited chromosomes and every moment of environment from age one second to age seventy years. Dr. Frank Beach once told me that, out of the many cases of infants lost in the jungles of the world, some eight had been captured after living for five to ten years in a savage environment out of contact with human beings. All proved to be irreclaimably savage. Their Neo-Encephalon had not developed or had developed with savage concepts and could not be altered.

Even the birds and animals develop a Neo-Encephalon as they mature and their character can be changed by changing their environment from birth. Dr. Beach has a moving picture of one of his experiments showing the effect of wild geese of isolating them from other geese at the moment of hatching and then bringing them up with a man as their mother. They learned to scratch for food with him, they learned to swim with him, they went wherever he went and finally, after they were grown up, they flew with him when he took off in an airplane. The same kind of experiment was performed with a lamb separated from its kind and taken care of by a little girl. The lamb truly became Mary's little lamb; so much so that it did not like sheep and strangely enough the sheep did not like Mary's little lamb.

In another experiment two chimpanzees were placed in a cage and nearby a block of wood with two bananas on it. The block was just heavy enough so that the chimpanzees, by pulling hard together on a rope extending from the block to the cage, could pull the block to the cage and get the bananas. One chimpanzee was brighter and more ambitious than the other. He discovered by experiment that he could not get the bananas by himself. He tried to get the other chimpanzee to co-operate by pointing out the

desirability of getting the bananas. The other chimpanzee was lazy or dumb or both and it took a long time to teach him to pull in unison with the leader but he finally did and they got the bananas. Then three bananas were put on the block. When they got them within reach the dumb chimpanzee sometimes tried to take two but the leader always slapped him and insisted on taking the extra banana as his rightful reward for organizing and administering the enterprise—an example of the profit motive in the animal kingdom and a simple illustration of how experience adds to the Neo-Encephalon.

The Dartmouth Eye Institute under the leadership of Mr. Adelbert Ames has, over a period of fifteen years, made some extremely interesting and fundamental studies of the marvelous administration of the statistical department of the Neo-Encephalon wherein Homo, Inc. accumulates all the records of its experience. With the apparatus which the Institute has developed, Mr. Ames and his associates demonstrate in a most dramatic way that, in forming such a simple judgment as the distance of an object, the statistical department of the Neo-Encephalon instantly takes into account (1) brightness, (2) size, (3) parallax, (4) overlay and the effect on each and on their combination of the static or temporal character of the object and its "thatness" or what it is thought to be. The demonstrating apparatus shows that if, for example, parallax is in conflict with size the former will govern as the statistical department has accumulated experience records which prove that parallax is much more reliable than size as a measure of distance. The statistical department records information with respect to abstract ideas as well as concrete objects, and Homo, Inc. never forms a judgment about anything until the previous accumulation of statistics on the subject has been consulted. There is no truth in any object or idea except as interpreted by the individual organism observing it. Therefore, when differences of opinion arise between individuals, nothing is gained by calling names—the constructive way of reconciling such differences is by exchanging experience and arriving at what all concerned believe to be the facts.

In animals and men the top administrative level, or so-called Neo-Encephalon, is relieved of practically all routine executive functions, thus leaving it free to plan the activities of the organism and give it over-all direction. The great and fundamental difference between Homo, Inc. and all other organisms is in its high development of planning and judgment and

especially in its unique creative ability. It can integrate all of its experiences whether obtained directly or vicariously by hearing, reading or seeing the experiences of others—and from this integration can create and apply entirely new concepts. Thus Homo, Inc. has acquired its amazing ability to learn so much about the universe in which it lives and to apply that knowledge to its advantage.

Homo, Inc. has thus been able to take charge of its own evolution and to free itself from dependence on evolution by the slow and painful process of survival of the fittest. We can say that Man has become the Deputy of the Creator with all the responsibility that this implies. In the past seven or eight thousand years he has on the whole carried that responsibility fairly well. The progress in the past one hundred years—a moment in geological time—has been amazingly rapid in all the sciences and arts where it is feasible to verify by exact observation and the reproducible experiment.

Progress Toward Order

In the art of human relations—in the progress toward a science of order between men—a science of which administration is a part—he has not done so well. But even in that he has made progress. To appreciate that progress we need only to be reminded of a few of the conditions of human life three hundred years ago; slavery, the serfdom of women, religious persecution, death or imprisonment for debt, to name but a few.

We are still making progress and showing our desire to make more. The Ford Motor Company proposes to add to its research activities a research into human relations. Mr. Luckman, President of Lever Brothers, says business must "stop making noises like a corporation" and must work to restore a sense of "togetherness" between management and labor. Mr. Given, President of the American Brake Shoe Company, says we must give the highest priority to getting to know the individuals working in our organizations and stop thinking of them as union members or as a group and think of them as individuals. The National Planning Association in its "declaration of interdependence" made by its agriculture, business and labor committees calls for an end to blind industrial warfare and the formation of a new code of economic behavior and indicates what such a code should be and how to put it into action.

We are learning more and more the value of good principles of administration including those governing

the design of organization structure. Excellent books have been written to expound these principles and to show how they can be applied. It has been interesting to me to observe that most of the principles I have seen proposed and successfully employed are in accordance with the principles of organization and administration employed in Homo, Inc., although, of course, not as complete or as perfectly applied.

We are beginning to learn that when a man-made organization suffers from disorders, it is best to look first for departures from sound principle and not to resort offhand to abusing or cajoling the men of the organization. As Urwick* says, if something goes wrong with our automobile we do not try to get it to go by kicking the rear end or kissing the radiator, so why resort to similar tactics in administering an organization of men?

We are also learning the advantages that come from decentralizing industry into relatively small self-sufficient units and delegating full responsibility to these units. Mr. H. W. Anderson, Vice-President of General Motors Corporation, has said:

We have decentralized organization, reliance being placed on individual initiative, freedom of action, and recognition of the importance of the individual as such. . . . General Motors consists of a number of divisions each under the jurisdiction of a general manager. The general managers have control over the operation of their divisions—that is, within the broad policies

* "The Elements of Administration" by T. Urwick, Harper & Brothers, New York.

established by the corporation—and their responsibility and authority can be compared to the responsibility and authority of the president of a large manufacturing concern.

Many other companies are decentralizing into relatively small self-sufficient units; among these companies are: Johnson & Johnson, the American Brake Shoe Company, American Home Products, the General Electric Company, the Western Electric Company, the Westinghouse Company, the Stanley Works, the United States Rubber Company, and the DuPont Company. The DuPont Company is a particularly interesting example of good administration. Its organization chart is the closest man-made approximation to the organization of Homo, Inc. that I have seen.

Challenge

Notwithstanding this progress, administration is, as it has always been, the limiting factor in the progress of man toward a science of co-operative order in human relations. The responsibility for that progress is about to be placed on you young men. You are equipped to accept it. You have not yet acquired any statistics in opposition and, therefore, have open minds. In this most important of human activities—administration—you are truly the deputies of your Creator. In the history of life in this world and in man himself you have an example of what it may be possible to accomplish.

PHIL CARROLL, JR.

Registered Professional Engineer
MAPLEWOOD, N. J.

SERGE A. BIRN

Consulting Management Engineer
Wage Incentives—Plant Layout—Methods
224 Heyburn Building Louisville 2, Kentucky
Phone: WAbash 0531
Registered Professional Engineer

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Box 187 ADVANCED MANAGEMENT

Developing Progressive Management

By PHIL CARROLL, JR.

Consulting Industrial Engineer, Maplewood, New Jersey. Author of "Timestudy for Cost Control" and "Timestudy Fundamentals for Foremen"
(Mr. Carroll's article was first presented as an address to the Trenton, New Jersey, Chapter of S.A.M.)

PROGRESSIVE management is the type that leads the parade, as I view it. Progressive management finds and uses better methods in the conduct of its operations. Progressive management is the opposite of that so often referred to these days as "reactionary."

Not to be progressive is "something," as the slang expression puts it. It requires an upsetting of two fundamental traits in human nature. Both the natural traits, resistance to change and resentment of criticism must be surmounted. These two important factors of human nature stand in the way of progress.

If we are logical in our thinking, we must admit that people who are progressive are the more unusual. Such people must have criticized themselves first and then made changes they resented in order to become progressive. These are facts to be kept in mind when we say that some part of management is not progressive.

By progressive we must mean also that the changes to be made are constructive in the long pull. For example, a management is not necessarily "reactionary" because it refuses to grant any or all of certain union demands. To illustrate, a recent newspaper article carried half a column story about union accusations of stalling because of a delay in agreement to pay \$1.25 per hour for laborers. And in all that descriptive matter there was nothing whatever about productivity. No mention was made of what work would be done in exchange for the demanded increase in wages.

All the Trimmings

The foregoing is an obvious illustration of another major qualification in a definition of progressive management. It calls to mind the term "enlightened" we often see mentioned in reference to certain managements. These terms may or may not be correctly interpreted to include that important factor we call profit.

So called progressive or enlightened management will be looking for new jobs if reasonable profits are not made with a certain regularity. Likewise, conserva-

tive or reactionary management will be in the same fix if failure to keep abreast of the parade brings about red figures on the Operating Statements. Both sides of the picture indicate the basic problem of management, which is to make decisions that bring about results of values greater than their costs. Too often the factors involved cannot be evaluated in dollars. The cost may be estimated but the return is anybody's guess. One example is related to our subject, namely training or educational programs. Conversely, sometimes the return can be calculated but the cost is unknown as is illustrated by a sales effort to get an increase in volume of business.

We can run through a whole series of things we consider progressive in these modern times. For example, we may think of morale surveys, counseling service, labor-management committees, and aptitude testing, to name a few. All of these are relatively new in industry. Some of the recent but earlier innovations are group insurance, hospitalization, sick leave and paid vacations. To some, the more basic but yet progressive things like timestudy, methods improvement, job evaluation and production planning are still way beyond their level of attainment.

All of these, and dozens more which could be mentioned, are additions to industrial operations in the last half century. Many of these new features have come into noticeable use only in the last ten years.

Now we could say that those managements which have adopted these new fangled ideas are progressive and those which have not are reactionary. But that is not the only test. It is a little like saying all those who have automobiles are modern and those who have none are old-fashioned. Unfortunately, my observations are that there are many who drive automobiles that should be locked in padded cells. But what is noticeable also is that many who have automobiles are supporting them through the neglect of some more important and useful essentials of a wholesome life.

What We Can Afford

One of the points these illustrations emphasize is that progressiveness must also be profitable. These

new devices have to be paid for somehow. They may pay for themselves through higher productivity, lower turnover or some other of the tangible returns. They may be taken out of profits or surpluses. Or they may be financed by the higher prices charged to the consumer. That is the side of the problem which most of us have to concern ourselves about. Our dollar certainly has been whittled down considerably in the last few years. And some of us resent that, as is borne out by the number of mentions in recent newspapers of refusal to pay the asking price of articles offered for sale.

It seems evident then that the price can't be raised very much to pay for new things. That procedure may price an industry out of business or shrink its volume greatly—hence unemployment. And I am convinced that if industry does not make fair profits, it will decline also because capital will be withdrawn. That path seems closed. The only one left is that of paying its way, or perhaps being paid for by some other progressive action that earns a surplus.

Of course, there are two sides to the question of paying its way. Like anything else, an otherwise progressive step can be mishandled, operated expensively or carried to extremes of ultra-refinement. On the other hand, a very reasonable set-up can cost too much because the follow-up is lacking and therefore, the returns are far less than expectancy. This is similar to the payment of wages where the amount of base rate is not nearly so important as the volume of production turned out in exchange.

Sound Thinking

Now if the foregoing is the correct background setting, it seems that the primary requirement for progressive management is sound thinking. That means thinking, not opinion. It means an analysis of the facts available and the use of sound judgement in weighing costs against returns. The decisions to be made require judgement because, as indicated previously, many intangibles are involved. Facts are not obtainable in many instances. This is true especially in projective planning—what I call crystal gazing.

The number of such problems is increasing. Our industrial situations become more complex everyday. As a consequence, the managerial job is becoming more difficult. Indications are that qualifications for management jobs will have to be higher in the future. Some references in current literature point the way to an increasing use of engineering trained men in managerial posts.

Of engineers, two things can be said. Certainly, their training is such as to make them basically analytical. They seek the facts. Partly, as a result, they are more objective and impersonal in their judgments. Both attributes are highly desirable in the handling of present day industrial problems.

Selecting Potential Managers

More fundamental perhaps is a requirement for intelligence and education. That means to me, that we have to do a better job of selection. It means that more attention must be given to the capabilities of the men promoted. Less credit can be given to seniority.

The arbitrary method of promoting the oldest man in the department is double edged. In this way, as we so often see, an individual gets pushed up way beyond his depth. He is unsuited to handling the problems which he is responsible for solving. Fortunately, he doesn't make many mistakes because he makes few decisions. Maybe that is why people say he is not progressive.

More disasterously for the industry, the capable man who should have gone ahead, goes out looking for opportunity. The vicious circle works around to the point brought out in a recent situation. The president of a concern was working strenuously on a program of managerial development because his company did not have any promotable material available to fill current vacancies.

Chance for Advancement

It would seem that after capable men are secured, they must be retained and encouraged. Both may be accomplished when advancement is based on merit. Merit here means the successful application of capabilities. The encouragement of promotion is placed next in importance to ability because surveys repeatedly put this form of job satisfaction well ahead of wages and other things which some of us think are paramount. True, the higher pay follows the promotion, but it appears that there are the factors of social status also that go with promotion. As an example, maybe getting one's name in the local newspaper has more to it than we have supposed.

Along with this promotional requirement goes a real problem. Merit rating won't solve it. It depends upon too many opinions involving too many factors which are not related to capability. Better measures have to be used. This reminds me of an experience during the war. We were discussing current production schedules with a group of plant staff men. Suddenly,

one man asked "When will they set up gauges so we can tell how our departments are functioning? We hear from the Boss only through complaints about things not done on time. We don't have any measures of the job we are doing as compared with what can be expected from our crew."

Measuring sticks of some kind have to be established. These cannot be limited to cost or budget measures. Again, that is like the wage rate. The productivity or the accomplishment is the result we are after, if progressiveness is the key note. To be sure, the cost is important, but not in dollars. It must be in comparison with the output, which really is the cost per unit of result.

Training Necessary

Naturally, it would be out of the question to promote a capable man without giving him training. At the same time, it is important to remember in this connection that his capabilities in the new job are as yet unknown. All we have to go by is that he has been capable in the past, or as in some organizations, "has kept his nose clean." He must be trained for his new job.

Training is frequently mentioned nowadays. Often, the training is being conducted for managerial development. Perhaps this is an extension of the J.I.T. courses carried on so extensively during the war. I prefer to think that it results from an awakening to the need.

We have not been progressive in the past, in one sense at least, in that training has been quite generally overlooked. This applies particularly to shop supervision. Heretofore, a good mechanic has been made foreman overnight by little more than an announcement. This repeated mistake has finally caught up with us.

These overnight promotions included two mistakes. The absence of training has been mentioned. The other, more serious one, was the supposition that trade knowledge was the important qualification. It may have been at one time when a foreman was responsible for hiring his people, planning production, estimating prices, working out designs and setting piece rates. It may have been true also after some of these functions were transferred to staff men, but before the shops became unionized. Certainly, it is not so today nor will it be true tomorrow.

Mechanical skill is usually rated by the personnel experts as low as 15% of the total requirement. That means 85% of the potential capacity must be made

up of managerial abilities of which leadership is an important element. And the ability to think must weigh heavily or else the foremen will be shut off from promotion and have to remain in the lower levels of management.

The Spark Plug

These factors are so interrelated that only the skilled psychologist can separate cause from effect. It seems to me, however, that when we give more consideration to mental abilities our problems will be reduced. To begin with, those who will think are going to get further because they will not be so worried about "sticking their necks out," as shop lingo puts it. Then too, such men will stand out, because it seems that the majority are content to do no more than is required. It is the extras that are necessary, in my opinion, to help bridge the gap between the job held and the next one up the line.

This point is emphasized by contrast. In reverse, we see many grievances put in when an operator starts working on the least skilled job of a higher labor grade because he does not immediately get the higher base rate.

Maybe it is only a current notion that "the world owes me a living." But we should make certain that past practices have not made it self-evident that "you can't get anywhere in this outfit." The desire to push on in the present company must be opened up again. That is one policy necessary to the development of progressive management.

Timestudy Training

Naturally, the extras put forth by the aspirant must have practical value. And again, those who determine what is practical must have themselves developed to the point of being progressive. If these conditions exist, the acceptance of the new ideas results from ability to explain them and their intrinsic worth. Undoubtedly, it is the intent to improve the ability to explain that accounts for the increased use of public speaking in managerial training courses.

At the same time, we must keep in mind with truly progressive management, that facts have more weight than words. To this end, it is suggested that training in sound timestudy methods is an excellent education for acquiring the habits and practices of getting the facts. In addition, it can be emphasized that extensive knowledge is gained of manufacturing processes, working conditions and industrial relations problems. Most

importantly, a true concept of time evaluations is instilled. The time knowledge is most important because it determines the two vital parts of manufacturing, namely conversion costs and process cycles.

The value of timestudy training as a fundamental background is attested by two trends. We now see a noticeable increase in the number of foremen receiving such training. In addition, there is a significant number of present day superintendents, works managers, and vice presidents who have graduated from timestudy work. Perhaps some of these men are as prejudiced as I am but they maintain now that all future shop supervisors will be drawn from the Standards Department.

As a side-light, a few years ago, one Chief Industrial Engineer was confronted with an unusual number of requests for transfers to his department. Inquiry disclosed that all the applicants were convinced that timestudy training was a short cut to promotion. They explained their conclusions by pointing to five managerial posts, including the top one which were filled by former timestudy men.

However, my personal feeling is that candidates for timestudy training should be drawn largely from those who have had shop experience. This would mean also that, men with engineering educations who are to be trained in timestudy should first be given actual shop experiences. Shop experience seems necessary to me also, for those who aspire to managerial posts in industry, regardless of the timestudy training. This conclusion grows out of the belief that present and future dealings with industrial relations problems require first hand knowledge of shop operations.

General Training

Any specific training has its disadvantages. The trainee becomes prejudiced by his limited field of knowledge. As an example, witness the never ending fight between the manufacturing man and the salesman in every industrial concern. This feud only serves to emphasize that both selling and manufacturing, and many other functions are important to the successful operation of a whole company. From our point of view, this means that additional training must be given in the other phases of the business while a potential manager is working at some one position to pay his way.

In its broadening aspects, timestudy training has many advantages also. This is apparent from the many kinds of tasks assigned to a capable industrial engineering group. Costs, planning, estimates, work

evaluation, processing, methods and pricing are among the important outgrowths of timestudy measurements. Frequent consultations are necessary with engineering, accounting, sales, production and personnel departments in addition to the regular work in the shop.

All this experience is needed in the development of progressive management. It must be provided in one form or another. A broadening experience is being given deliberately by Consolidated Edison through its well known "merry-go-round" training plan. In this, eligible candidates move from one department of the organization to another at periods agreed upon, to pile up varied experiences with several functions of the business. The moves are guided by an advisory group which attempts to fit the experience to be given to the individual's abilities and interests. Every effort is made to get the round pegs formed as round as possible. As similar process has been carried on by McCormick and Company for years with its sponsorship plan. The idea in this latter plan is to study the individual with respect to his likely ultimate work with the company. Once this is agreed upon, his training and experiences are directed toward the chosen goal.

Outside Exposure

All the elements touched on up to this point have dealt with localized conditions. A strictly local viewpoint has elsewhere been referred to as isolationism. Such is not consistent with progressiveness. Therefore, the outside exposure must be added. Here is the gap that the Society for the Advancement of Management can help to fill. It provides exposure to progressive thinking and new developments. Other groups like American Management Association offer the same advantages with one important exception—the local chapter.

The SAM Chapter brings to its members the broad experiences in all phases of modern management. Those who attend are exposed to the newest experiences in all the fields of management. And those who attend can become conversant with the current experiences of other members. These factors are extremely important for their value in proper timing in this our rapidly changing industrial situation. Frequently, what happened nearby yesterday has considerable bearing on current decisions.

Membership in a management society is one thing, attendance at meetings is another and interest in acquiring knowledge and progressive experiences is a

third. All three have to be present before development can be attained in any marked degree.

By way of attempting to foster progressive development, one manager sends his junior executives to all meetings and conferences in their fields of work. Another tries to get his staff to take part in Chapter activities and programs. Many encourage in one way or another, all those individuals who demonstrate a true interest in increasing their knowledge. In an entirely different way, numerous managements defray part or all expenses for educational courses of study that are satisfactorily completed.

Management Tomorrow

All sorts of things are being done to develop better managers. The amount of training seems to be on a decidedly increased scale. This may result from the necessity for getting back to cost realities. Much re-education would have to be done if only to get out of the cost—plus habits acquired during the war. Since then also wages have spiraled upward and costs along with them. That brings on the problems of meeting competition, at home and abroad. Many concerns will have to work strenuously in order to survive.

Then between the losses of men who did not return from the armed forces and the too rapid promotion of some who remained, many companies must develop adequate managerial people. In some ways these misfortunes have forced progressive development in that training must now be used where simple upgrading might have been followed had better men been available.

Certainly training will do much to aid the development of progressive management. My reason is that training is educational, even if it is by forced feeding, and the increase in knowledge almost surely makes for more open-mindedness. It is the open mind we have to develop before correct decisions can start the progressive actions we are discussing.

As I see it, the development of progressive management involves two parts. One is the improvement of present managers. The other is the development of the

potential managers of tomorrow. Indications are that both have to be done because America seems to be losing ground. According to some reports, we do not hold the position we had before and during the war.

Admittedly, high income taxes and low profits have greatly reduced the incentives to progress. Many managers have reacted the same as shop people to "piece rate cutting." They don't try anymore to do the exceptional work they can do. Some of the incentive will return with the promised reduction in taxes on individual incomes. Some will return regardless, because certain types of managers are actually more interested in accomplishments than in earnings. But there will be another group that will fall by the wayside in the reshuffling that will be made necessary by the competitive struggle. These will be put aside because they can't or won't progress.

But the development of progressive management in all levels will come through educational processes in the main. Many will insist upon "learning the hard way" through bitter experiences. Let us hope, however, that the majority will keep pace with the compounding problems of industrial management. This can be done in part by promoting those who are the most capable instead of those who last the longest. Back of this must be a backlog of ability to draw from that has been obtained by better selection methods and retained by appropriate earnings and encouragement through merited promotions. And in the mill, there must be definite and intensive training courses. This cannot be left to chance or the hit and miss process, as in the past. We will need more progressive managers to properly handle all of the competitive problems growing out of industry-wide and nationwide union contracts. The managers will have to grow as rapidly as the problems do. Those who are progressive will be leading the parade by finding the solutions through advanced preparations. Progressive management is the type we will need in the future and it must be developed. In this important effort, SAM can make a real contribution, particularly through the work and programs of the local chapter.

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Trade Unionists and Scientific Management

By GEORGE JAY ANYON

Instructor, Industry Department, Wharton School, University of Pennsylvania

IN American Industry, today, there are those among unionists as well as among management who draw upon the art and science of the "scientific management movement" as their fountainhead of principles. Even between those, who have a common scientific approach to the problems of industry, does collective bargaining relationship seldom begin on common ground.

At the conference table, in the course of negotiations, differences are often resolved. Sometimes it takes conciliation or mediation to lead both sides to a common ground. Sometimes the differences are placed in the hands of a third party—an arbitrator. Other times, the differences become issues that are resolved "on the picket-line." This situation raises a question worthy of consideration: What are the conditions, if any, upon which trade unionists would accept and cooperate in a scientific management approach to the problems of industry?

There is no finality in this area of human relations as there is no finality in other aspects of human relations. The problems are man-made, the solutions are man-made. Thereby there is no basis upon which experiences, emotions and self-interest can be eliminated completely.

The International Industrial Relations Association appointed a special committee to explore and define the problems of industrial relations. This committee suggested that industrial relations may be regarded as developing out of earlier concepts of management-labor relations in the way as shown in the accompanying table.

The shortcomings of this presentation flow mainly from its form and its mechanical division into periods. The impression that a movement flows chronologically from one historical period to another, involving all industry in its movement, is still another weakness. It does, however, focus on the main point. The approach that is taken to management-labor relations directly affects the results obtainable in the human relations in Industry.

This fundamental concept, that the art and science of industrial relations go beyond the realm of methodology and techniques in industry, is the key to understanding the nature of the problems arising in

(1)

Chronology	General Management Problem Emphasized	General Theory of Labor	Aspect of Labor Problems Emphasized	Terminology
PERIOD I	Necessity of Mechanical Efficiency	Commodity Theory	Opposition to Labor Unions and Rise in Wages	Labor Problem
PERIOD II	Necessity of Individual Worker Efficiency	Mechanistic Theory	Welfare Work and Incentive Wages	Personnel Problem
PERIOD III	Necessity of Group Co-operative Efficiency	Good Will Theory	Development and Retention of Workers' Good Will. Reciprocity of Relations	Industrial Relations

this area of human relationship. To appreciate fully the problems of industrial relations we must probe into "attitudes," "outlook" and "approach"¹ of human factors of production.

To study all the forces involved in industrial relations is too great a field for one study. To limit the study to the trade unionists is to accomplish two things. First, it limits the study to a workable project size. Second, it probes into an area still to be thoroughly examined.

The Problem to Be Studied

The problem to be explored deals with the motivation and behavior of the trade unionists. Collective bargaining is the crucial point of contact between industrial management and trade unionists. To this point of contact the trade unionists bring all their resources of ideology, economic strength and all the skill they can muster. Once a union is formed, its immediate goal is to achieve collective bargaining. It is during collective bargaining, as a continuing process, that the trade unionists state what they want. It is at this point where the intent, the attitude and/or the

¹ "Rationalization and Industrial Relations." International Labor Office, Series B. 18, p. 347.

motives are manifested in something tangible and concrete.

Therefore the specific problem to be studied and developed is, as conceived by trade unionists: What are the conditions upon which the problems of industry can be tackled by both trade unionists and scientific management?

Appreciation of the Motivation of the Trade Unionists

The nub of this question is the attitude of the worker. The worker's feelings and his experience are the basis of his motivation. The worker recognizes no sharp lines of demarcation between his life in the factory and his home life or his community life as a citizen.²

First of all a worker wants a job. Then will the worker differentiate between a good job and a bad job. The worker's judgment of his job is, in essence, the reflection of his desire to enjoy the property of the job. It is in the acid test of "opportunity" and "security" that the worker seeks, in the fuller sense, a proof of the "success" he has attained.

If the relationship between management and worker, in any way, has cast doubt in the worker's mind as to his ability to attain or retain the standing he, as an individual, has accomplished and/or set for himself, he will seek ways and means of reinforcing himself. Protecting and increasing the opportunities and securities of work are prime movers in the unionization of labor.

The motivation of the trade unionists will more easily be understood when it is recognized that individual workers act in unison, whether in a union or in spontaneous action having no previous organization to channelize their effects, for the same basic reasons.

Various concepts have developed in the American labor movement based upon these desires of American workers. These concepts have crystallized into concrete objectives that motivate the trade unionists. There are distinct patterns discernible. There is no sharp line between organizations of entities within the trade union movement which may represent each pattern as a pure example, down the line. The opposite is true. The labor movement reflects a conglomeration of all these patterns. But the dominant patterns are apparent.

There Are Three Basic Patterns of Objectives

In the labor movement, today, there are three patterns of objectives that act as nuclei. Around each

exist little currents that represent variations. The "attitudes," the "approaches," the "outlooks" of trade unionists are more easily discernible and more thoroughly understood when the three basic patterns are identified.

One pattern is based upon class-consciousness. Here, the object is to give impetus to the crystallization of a class-consciousness amongst workers and to contribute to the requirements of class struggle and the organization of workers into a class.

Another pattern is based upon mutuality of interest between management and labor. Here, both capital and labor are recognized as the primary factors in industry. Each is recognized as essential and each is considered dependent upon the other. This interdependence is believed to be so irrevocable that success in industry is attainable only through understanding each other and by cooperation between these two factors.

A third pattern is based upon practicality and opportunism. It is a pay envelope approach to a large degree. Its practicality aims at meeting the immediate needs. Here, there is an absence of any principles as to "classes" or "mutuality of interests" between labor and management.

There can be no doubt in anyone's mind that the first two patterns identified (class-consciousness and mutuality of interests) are diametrically opposed to each other. These forces in the organized labor movement have been in constant conflict. The conflict still rages. Each seeks to establish hegemony over the labor movement in the United States.

Between these two conscious protagonists in the labor movement is found the third and largest single group. It holds the balance of power in the labor movement. Its ideology has been described as being "The program of no program, the policy of no policy and the philosophy of no philosophy." This pragmatic "bread and butter" approach to unionism is characteristic of the average union member.

The forces that are guided by a mutuality of interests between management and labor joined those forces that are practical opportunists to "do battle" with the "class-conscious" trade unionists throughout the history of organized labor in the U. S.

There were at least three important periods in the history of the American labor movement when the bid was made to win American labor to the principles of revolutionary unionism. In all three periods the revolutionary unionists were kept from assuming any widespread dominant position in the labor movement. The

² The outstanding contribution to understanding this aspect of problem was made by Whiting William—"Mainsprings of Men."

first period began in the 1840's and ended with the panic of 1857. The second period began right after the Civil War and ended with the emergence of the A. F. of L. The third period started right after World War I and ended in the 20's.

While those who believed in the "mutuality of interests" between management and labor joined with the "practical," "pure and simple" trade unionists to keep revolutionary trade unionists from attaining dominance over the labor movement their collaboration did not lead to their fusion organically or ideologically. Furthermore, the defeat of these class-conscious unionists did not doom revolutionary unionism to extinction.

Historically the American labor movement has directed its energies to increasing the opportunities and improving the conditions of the individual worker rather than improving the status of wage-earners as a class or as co-partners with management. Practical achievement, immediate objectives, attainable ends by creating or taking advantage of the most favorable conditions possible in bargaining with employers, basically characterize the dominant objective of the trade unionists in the United States. To attain this end the trade unionist relied, mostly, upon a play of forces that periodically favored their manipulation of the labor supply. The short-run view, even when opposed to the long-run view of labor's needs, is the dominant view of the American labor movement.

The Apparent Dominant Ideology

Those trade unionists, who do seek to win adherence to their belief in the revolutionary ideology, seek a correlation of economic, social and political action on the part of the workers as a class. But, in the area of collective bargaining, in the economic industrial field, they have been cut off and isolated when they sought to go beyond the immediate needs of the workers. Among those trade unionists who are seeking a common ground with management, the controlling factor is experience, opportunity and circumstances. They seek to resolve the problems that arise in an economy dominantly characterized by private enterprise, by enlarging upon the process of collective bargaining.

Consciously or unconsciously, willingly or unwillingly, the American labor movement has developed along the lines of accepting collective bargaining as its primary objective. Where it departs from that objective it does so under pressure of circumstances or experience.

Those trade unionists, whose ideology, motivates

them to seek a common ground with management, exert the greatest degree of general leadership in the labor movement today. They seek to consolidate that position of leadership. Those trade unionists are cognizant of a pressure from the revolutionary trade unionists on one hand, and the pragmatic and opportunistic unionists on the other. This leads to the search for those conditions that will satisfy immediate needs of the workers on one hand and in areas, mostly outside the realm of collective bargaining, it leads to independent labor action that approaches "class-interests" activity. But, this activity outside of collective bargaining could very well result, to a great extent, from an attempt to gain on other "fronts" (e.g. political and social) what is denied the trade unionists in the course of collective bargaining.

A General Examination of Performance

Differences in experiences, differences in the maturity of the leadership, differences in the stage of development of unions no less than the differences that exist between industries lead to the variations and irregularities in the pattern of behavior of trade unionists. Yet it is not accidental that a position is taken by trade unionists in one direction or the other. There is a pattern, insofar as the intent is concerned. The proclaimed position or action taken may not be the same two times in succession, but the very change made flows from a consistency in "intent."

A trade unionist is intent upon accomplishing these basic points:³

1. Protect the worker from any arbitrary and uncontrolled discretion of management.
2. Protect the union, as an organization, from being disrupted by managements who discriminate against union members.
3. Strengthen the union by making union membership an aid to employment.
4. Safeguard the union victories from being turned into threats to the security of the union membership.
5. Higher wages and better working conditions to be accompanied by a humanization of industrial policies.

Trade Unionists Reaction to "Science In Industry"

Science in industry has been applied not only to change the physical processes of industry. An analytical and systematic approach, commonly called a scientific approach, has been taken to control wages,

³ Prof. Slichter: "Union Policies and Industrial Management."

to control output and to control human relations in industry.

Some trade unionists have drawn the conclusion that precisely because of this application of science in industry, the workers' share in the control of industry must be enlarged. There is an ever growing number of trade unionists who seek to establish "a scientific unionism to match scientific management." Ideologically, they are of the "mutuality of interests" school of thought. "Once collective bargaining is taken for granted and removed from the realm of emotion," they seek to have, "labor and management begin to work out the major tasks set for them by a power and machine age."⁴

The late Sidney Hillman has summarized the modus operandi of these trade unionists when he described his own pattern of behavior. He said, "After we in our organization have given a stubborn concern all the fight it wants and after we have brought them to recognize the status of labor in an orderly, constitutionalized industry, we send our best heads to put the firm's productive strength in shape. For if they prosper we may secure a share of that prosperity, and if they don't, it is we that may have to close shop."

The behavior of some trade unionists follows other patterns. Those who base their actions on the premise that management is entitled to a reasonable and even generous return on capital investment, insist that beyond that point all productive gains should be passed on to the workers in the form of higher wages and improved working conditions.⁵ The final distinctive pattern of behavior is based upon the belief that the function of management is to manage and the function of the union is to protect its members. These trade unionists believe that any trade unions that take over functions in the management area are in for "nothing but headaches" for their troubles. These trade unionists pay strict attention to bargaining for protective provisions to be written into the trade agreements. Furthermore, their actions are based on the belief that contract provisions may "prove to be little better than nothing if the organized strength of the employees isn't available to obtain enforcement."⁶

Some of the leaders among the trade unionists, mostly the second-generation leaders, believe that the American labor movement is in need of an orientation. What they seek to evolve is a method of action. They seek to synthesize and generalize the entire field of labor experience.

⁴ Philip Murray.

⁵ E.g.—John L. Lewis.

⁶ E.g.—U.E.R.M.W.A.

The Emergence of a Program

At this stage of development in the history of the American Labor Movement it is not possible to crystallize any clear-cut program. The situation is not yet "ripe" for the fullblown emergence of a unified program of labor.

First of all, the unevenness of the level of development of industrial relations in industry mitigates any uniformity of objectives and behavior throughout the entire labor movement.

Secondly, the unevenness in the level of understanding and "conviction" of trade unionists on all levels in the trade unions, exerts pressure to remain primarily short-sighted, pragmatic and opportunistic.

Thirdly, the split in the ranks of labor tends to create an opportunism in approach to problems for the sake of outdoing the competitor section of the labor movement.

Fourthly, the present protagonists of the tendencies and "schools of thought" show a desire to avoid the earlier experience in the history of the labor movement that took the form of fratricidal war within the labor movement.

Fifth, the greatest surge away from opportunism and revolutionary unionism took place in the "twenties." It was manifested in full participation in union-management cooperation programs. However, the effect of the failures and the "wounds" of the "thirties" are not easily forgotten. This exerts a pressure against zealous participation in any programmatic commitments based upon union-management cooperation.

However, just as there is the strengthening of the forces of the scientific management movement amongst the personnel of management, there is the emergence of a "scientific unionism" that is beginning to influence the leadership in the trade unions. ("Scientific unionism" is used as an apt phrase to identify those unionists that are guided by and draw upon the art and science of the scientific management movement.) The characteristic feature of their evolving program is that it is not uniformly accepted in the labor movement. Likewise, it is characterized by hedges and safeguards based upon experience and attempts to win wider support in the ranks of labor.

There are trade unionists who have studied the social sciences and industrial problems in the course of a college education. In other cases, the trade unionists have surrounded themselves with staffmen who have that training and background. Among these trade unionists can be found the advance guard that seeks to

evolve a "scientific unionism" to match the "scientific management." The impact upon them by those forces that are guided by concepts of "class struggle" as well as by those eminently practical and opportunistic, together with the "bread-and-butter demands" of the mass of the membership of trade unions, has affected their thinking and action. But, it is they who are the foremost and dominant figures, who speak as the dominant trade unionists of the day. It is they who have crystallized most of the points of an evolving program that gives the essence of what trade unionists want from scientific management today.

An Indication of the Evolving Program

The following presentation will be based upon what the trade unionists have indicated they want to accomplish and what conditions they seek to create or find in industry:

A. In the Realm of Philosophy of Industrial Relations⁷

The Trade unionists' approach can be summed up in these points raised:

1. Establishment of collective bargaining must mark the end of individual relations between workers and management and the beginning of group relations.
2. Collective bargaining is the means available, through unions and management, for workers and owners to solve their common problems without recourse to the government.
3. During collective bargaining the policies and actions of the union will be guided by the policies and actions of management.
4. Likewise, the initial collective bargaining practices will be affected by the pre-collective bargaining practices of the management.
5. The successful collective bargaining contract is based upon a peaceful administration of the contract. This calls for worker, union representative and management participation in the administration of contract. Likewise, it calls for confidence on the worker's part that justice will be done through collective bargaining machinery.
6. The greatest cause of controversy is to be found in the misuse of managerial power and authority. It is a more decisive force than the profit motive.⁸

The most regularly presented demands made by the trade unionists can be presented in summary form as follows:⁹

1. Management must discard the belief that it is infallible.

2. Management must grant the trade unionist the opportunity to participate as an equal in the production process.

3. Management must accept bona fide trade unions and the genuine collective bargaining process in good faith.

B. On the Application of Methods and Techniques of Scientific Management

The trade unionists' approach is summed up in these points raised:¹⁰

1. Owners, management and trade unionists must join forces to pursue optimum productivity. That level of productivity means, "the highest possible balanced output of goods and services that management and labor skills can produce, equitably shared and consistent with a national conservation of human and physical resources."¹¹

2. When the nation's program of social security is more fully developed, workers could feel much freer in developing an enthusiasm about technological improvements.¹²

3. Well done motion and time studies, taken up after thorough-going research and reforms of other shop practices will improve the morale of the whole enterprise. Management must demonstrate that it does not "define economy as that which can be taken out of the hides of the workers."¹³ It must show that it subjects its own activities to scrutiny and research and that its own personnel is subject to the discipline of effective operation.

A departure from the approach just presented is found prevalent among those trade unionists who, "as a matter of principle," would not accept motion and time study. But they feel that they must meet the problem as management propounds it. First of all they would seek to oppose it; then if they have to, deal with it, but in the end seek to protect themselves and their members."¹⁴

The most regularly presented demands made by trade unionists can be presented in summary form as follows:

1. Establish union participation or approval in time studies on this basis:¹⁵

⁷ *Op. cit.*, "Organized Labor and Management," Preface.

⁸ "Organized Labor and Production," M. L. Cooke and Philip Murray, p. 22.

⁹ *Ibid.*, p. 94.

¹⁰ *Ibid.*, pp. 96-98.

¹¹ Solomon Barkin's Speech, N. Y. Time and Motion Conference, *Op. cit.*

¹² "Labor Examines Time Study Methods," William Gomberg, pp. 2 and 3.

¹³ "Dynamics of Industrial Democracy," H. J. Ruttenberg and C. S. Golden, "Conclusions Regarding Union-Management Relations."

¹⁴ P. 63—"Organized Labor & Production," M. L. Cooke & Philip Murray.

¹⁵ "Organized Labor and Management," Handbook, Steel Workers Organizing Committee, Page 6.

a. Where workers have contributed to a change in specifications the worker responsible for change to receive one year's direct labor savings effected by change.

b. Written details of engineering procedures used in establishing rates is to be submitted to the union, enumerating:

- (1) instrument used
- (2) minimum elemental times
- (3) number of readings
- (4) basis of any reading rejects
- (5) method of analyzing data
- (6) basic data basis for contingency allowances and allowances for fatigue and personal needs
- (7) methods of leveling
- (8) yardstick used and number of observers

c. Establish, standardize and evaluate limits of accuracy of technique involved through collective bargaining.

d. When engineering changes take place, only element of job affected should be retimed.

e. Any controversies arising to be subject to the "grievance procedure."¹⁸

f. All installations must have purpose made clear and must be agreed to by both parties.

g. Before incentive systems are installed all time studies and job classifications should be reviewed to eliminate inequalities and to guarantee against rates being reduced as a result of installation or modification.

h. Provisions must be established for guarantee of minimum earnings. A basis must be clearly established for extra remuneration for extra production.

i. The union shall have the right to bargain collectively concerning all matters pertaining to time studies.

j. Employee must be protected from loss of earnings as a result of retiming of jobs or transfer from one job to another.

3. Once the position of the union is secure and has a permanent and satisfactory contractual relation with management, the management willing, an agreement for cooperation can be drawn up on the following basis:

"a. The union agrees to cooperate with management in order to reduce costs, enlarge sales, improve quality and in general to advance interests of the industry.

"b. The management agrees to share equitably with the union any benefits so obtained, in the form of increased employment, better working conditions, increased wages or decreased hours.

"c. Nobody is to lose his job as a result of any improvement that is installed. If ways are discovered to do more work with less labor, they are to be put in gradually, and then only with the consent of the union. They must be installed in such a way no discharges are necessary—as for instance at a time when sales and output are increasing."¹⁷

C. On Collectively Bargained Agreements in Industry

A summary of the approach by trade unionists can be made along these lines:

1. "A collective bargaining contract is a set of agreed-upon rules governing the relationships between the union and the company."¹⁸

2. Interpretations of provisions in any trade agreement must be agreed upon by both parties and become additions to the original contract.

3. All grievances should be settled as near the point of origin as is possible, as speedily as possible, and on their merits.¹⁹

4. Collective bargaining agreements must contain a grievance procedure with mutually agreed upon arbitration as the final step.²⁰

5. "The successful administration of a contract requires the maintenance of an effective system of communications for both management and the union in bringing complaints from the bottom up and relaying decisions and policies from the top down."

6. Under a collective-bargaining contract a worker acquires a property interest in his job. He is provided with the greatest amount of job protection, the removal of favoritism and discrimination, and he is guaranteed full freedom of opportunity for advancement. The power to discharge is no longer in the hands of a single, arbitrary source.

The most regularly presented demands made by trade unionists can be presented in summary form as follows:²¹

1. Collective bargaining on wages, hours and working conditions must be accepted by employers and employees in every instance where the majority of the workers choose to bargain on these matters. These

¹⁸ United Electrical, Radio and Machine Workers of America Guide, *op. cit.*, (e, f, g, h, i, j).

¹⁷ *Op. cit.*, "Production Problems," p. 5.

¹⁸ "Handling Grievances," Handbook, Steel Workers Organizing Committee, p. 2 (for 1 and 2).

¹⁹ *Op. cit.*, "Dynamics of Industrial Democracy," Conclusions (for 3, 4 and 5).

²⁰ *Op. cit.*, National Labor—Management Conference, pp. 45-47.

²¹ *Ibid.*, pp. 45-53.

agreements must be reduced to writing and signed by the representative parties.

2. The trade agreement should incorporate all other activities which jointly will be regarded as mutually advantageous and desirable.

3. The agreements must establish the mutually recognized rights and duties of the parties. The full contents of the agreements must be made known and be made available to all members of the union and employer group.

4. Contract commitments are to be observed without qualifications.

5. A procedure must be established for the settlement of grievances. There should be provided, by mutual agreement, a final determination of unsettled grievances and the procedure to be followed.

6. The procedures must facilitate settlement of grievances by the establishment of:

a. The successive steps and methods of presentation of grievances and the appeal from one step to another.

b. Definite time limits for presenting grievances, appeals and decisions must be established.

c. Adequate opportunity for interested parties to investigate grievances must be established.

7. All renewal clauses must allow ample time before termination of agreement for negotiations and re-negotiations.

Since the "need," as placed by Philip Murray is a "scientific unionism to match scientific management" and this program evolving from the trade union movement is designed to establish a program upon which both forces can find a meeting ground, it seems justifiable to test and see whether this program will do that. The most logical test would be to find out what the reaction is, of those who are responsible for the application of scientific management methods and techniques, in industry, to the crucial questions raised by the trade unionists.

Survey

An attitude survey was drawn up based upon the essence of the trade unionists' program presented in this study. The opportunity was made available to sample the attitude of scientific management personnel at the First Annual Time Study and Methods Conference.²²

Questionnaires were distributed to the delegates and guests in and about the conference. One hundred and

seventy completely answered questionnaires were returned.²³

The simple method was used of totaling the number of answers for each alternative in the formulation of an opinion. After establishing the percentage, based upon 170 answers, the evaluation was considered in the light of the question: "How many agree with the attitude expressed by the trade unionists in their writings, speeches and action as presented in this study?"

The Results

On Collective Bargaining

76 per cent of those answering the questionnaire agreed that, in establishing collective bargaining, the attitude and behavior of management determines to a large degree the degree of cooperation shown by trade unionists.

95 per cent of those answering the questionnaire agreed that, once collective bargaining is established in an enterprise, management needs to exert greater effort than before collective bargaining was established to maintain its leadership over its employees.

79 per cent of those answering the questionnaire agreed entirely that "when trade unionists and management establish mutually satisfactory collective bargaining relationships, management becomes more efficient." Only 56 per cent of those answering the questionnaire agreed that trade unionists become more cost conscious.

54 per cent of those answering the questionnaire agreed that when trade unionists and management arrive at a mutually satisfactory collective bargaining relationship, the competitive position of the company is improved, but 92 per cent of those answering the questionnaire agreed that the earnings of the workers increase.

A plurality of those answering the questionnaire (amounting to 44 per cent of the answers) agreed that the earnings of owners increase, while 34 per cent believe it decreases after collective bargaining relations are established.

²² Those who submitted completed questionnaires were:

1. 158 males, 9 females, 3 failing to indicate whether male or female.

2. 165 declared themselves members of management

1 declared himself as a member of a trade union

1 was still in the United States Army

3 failed to signify any details.

3. 126 had graduate engineering background

31 had experienced shopman's background with no engineering

background

5 had experienced shopman's background and some engineering

training.

8 failed to signify any details.

4. 133 had over 10 years' experience in industry

33 had less than 10 years' experience in industry

4 failed to signify any details.

²³ Conference sponsored by the Society for the Advancement of Management and Management Division of the American Society of United Engineers, April 26-27, 1946, Hotel Pennsylvania, New York City.

On Production Methods

On the matter of technological improvement, 39 per cent of those answering the questionnaire agreed that at the point of installation, when technological improvement and/or labor-saving devices result in the separation of a worker from payroll, the estimated first year's savings in the unit costs, resulting from elimination of that operation, should be shared on the basis of a ratio determined by collective bargaining.

72 per cent of those answering the questionnaire agreed that when the allowed time for a job is no longer the same, as a result of the introduction of labor-saving devices and/or an improved method of work installed, the change in the time allowed for that job should be made only for the elements of motion affected.

A majority of those answering the questionnaire (53 per cent) agreed that workers' participation via trade union shop organization, when rates are set, when motion and time studies are made and when job evaluations are made, results in greater output, while 62 per cent of those answering the questionnaire agreed that earnings are greater than when management alone assumes responsibility in these matters.

On the Trade Agreement

84 per cent of those answering the questionnaire agreed entirely that a trade agreement is a set of rules, mutually agreed upon, to be enlarged and developed by agreements reached on individual cases as they arise.

A like number of those answering the questionnaire (84 per cent) agreed that a trade agreement must describe a system to be followed in handling grievances.

61 per cent of those answering the questionnaire agreed that arbitration must be incorporated in trade agreements.

But only 48 per cent of those answering the questionnaire agreed that all problems of carrying on collective bargaining should be put to this means of solving stalemates or disagreements.

11 per cent of those answering the questionnaire believed that installation of improvements in methods of production should be subjected to collective bargaining.

85 per cent of those answering the questionnaire believed that the establishment of guaranteed base rates should be subjected to collective bargaining.

55 per cent of those answering the questionnaire

believed that the installation of an incentive wage plan should be subjected to collective bargaining.

56 per cent of those answering the questionnaire believed that the establishment of a job classification system should be subjected to collective bargaining.

21 per cent of those answering the questionnaire believed that the application of motion and time study engineering should be subjected to collective bargaining.

24 per cent of those answering the questionnaire believed that the establishment of allowances in setting output standards should be subjected to collective bargaining.

12 per cent of those answering the questionnaire believed that the establishment of scrap, waste and production count methods should be subjected to collective bargaining.

Differences Discerned

Serious differences became apparent in the following area of collective bargaining questions:

On the question of the extent to which the attitude and behavior of management determines the attitude of trade unionists:

Although a majority agreed with the attitude expressed by the trade unionists, there were one third who took the position that could be considered diametrically opposed to that of trade unionists.

Although a majority agreed that when trade unionists and management establish mutually satisfactory collective bargaining relationships the competitive position of the company is improved, nearly a quarter of those who answered took a position diametrically opposite.

Serious differences became apparent in the area of production matters:

Although the number that accept the principle that management and labor should share the savings between them amounts to a majority, nearly one third express the diametrically opposite point of view, primarily in the direction of management keeping the savings itself.

Serious differences became apparent in the area of the trade agreement:

Here there fails to crystallize any majority opinion in close agreement with the trade unionists. The plurality is substantial, but a combination of those seeking various alternate expressions of limiting the area to be covered by a trade agreement would actually add up to a majority.

A Conclusion

It would seem that this sample of attitudes indicates agreement between "scientific management" and "scientific unionism" on some very basic issues. But to say that the immediate future would prove to be a "honeymoon" would be incorrect.

Without stretching the point involved too far it can be said:

That area that bears the most direct affect upon the wage-profit relationship is where the greatest differences exist. On the broader issues, that border on generalizations, "scientific management" and "scientific unionism" seem to be closer to finding a common ground.

At this point a basic conclusion is justifiable. There is no basis for declaring a fixed state of incompatibility between scientific management and trade unions. From the trade unionist's point of view and record of performance there can be no justification of the belief in a predestined stalemate between the two forces in Industry.

The approach of the trade unionists as well as their

performance does leave room for soluble problems to be tackled by both institutions in the area of collective bargaining.

There are no criteria to go by in any area of collective bargaining. Even as to what can be considered "mutually satisfactory" collective bargaining, there is no criterion. What each is willing to live with or what each is willing to give and take, is the basis of present day collective bargaining. Under such conditions a thorough understanding of what the trade unionists consider to be the "conditions upon which the problems of industry can be tackled by both trade unionist and scientific management" could lead to more successful efforts to make collective bargaining work effectively. It is imperative to remove as many "unknown quantities," from this human equation, as possible.

Neither management nor labor has shown any unity behind any programmatic approach to the problems of industry. That does not mean that such a program cannot be forthcoming that will unify either one or the other, or doth. This evolving program presented is but one example of what is in the making.

The Control Unit: Newest Techniques for Controlling Decentralized Operations

By JOHN B. THURSTON

Director of Industrial Engineering, Transcontinental and Western Air, Incorporated.
(Mr. Thurston's article was first presented as an address to the New York Chapter of S.A.M.)

WHETHER or not the United States will have a depression in 1947, it is a recognized fact that American business must find more effective means for conducting efficient operations. Should the depression now forecast by the stock market, economists and business men become an actuality, practical techniques for reducing and controlling costs will be a prerequisite of survival for many companies.

In the era of economic adjustment stretching immediately before us, no industry is faced with more critical problems than the airline industry. Here is a young industry which, before the war, was small business. Today, after a few short years, the airlines have become big businesses.

In the August 1946 issue of *Fortune Magazine*, an article bearing the title "What's Wrong With the Airlines?" states as follows, "The question that needs to be asked is: How good are the airline operators, not as operators but as business men? . . . Too few of the airline executives seem aware of the fact that the present emergency is critical, that the success of their response to this challenge will determine their own individual fates. . . . The management habits of old days show up conspicuously both in the under-estimation of the travel market and in the lack of solutions offered for unscrambling the resulting confusion. Good market research and analysis of the scale and precision common in big business are virtually unknown. In the non-technical and non-operating phases, the airline executive relies heavily on the sense of 'feel' which served him so well in the big little business days. . . . Patient and long suffering today, the passenger is also the United States public, and if he gets pushed around too much he invariably fights back. And he may fight back, not by staying off the airlines, but by giving political support to the men who can best capitalize upon his gnawing frustration. In short, the best way for the airlines to keep out of political hot water is to run their business better."

And the airlines cannot run their business better unless they apply new and better techniques for con-

trolling their decentralized operations. There is probably no better example of decentralized operations than those of the airlines. TWA, for example, operates in and out of 35 cities in the United States stretching from Los Angeles and San Francisco on the West Coast across the country to Washington D. C., New York City and Boston. From the East Coast, TWA operates over the North Atlantic to Paris, Rome, Cairo and on around the globe to Shanghai. The development of techniques for controlling these widely geographically dispersed operations requires imagination and a fresh approach to the problem of management control. Old control methods will not suffice any more than they sufficed to control the operations of the Army Service Forces or the shore establishments of the Navy.

The threat of increased governmental control is a real one and if the airlines fail to run their business better and to discharge their obligations to the public, increasing rigidity of regulation will most certainly ensue.

Judge James M. Landis, Chairman of the Civil Aeronautics Board sounded a warning on October 14, of last year, before the Aviation Clinic in Oklahoma City when he said "Costs in the air transport industry are far from stabilized, and, as of the moment, due to the need for new equipment and the rapid obsolescence of equipment, are fairly high. Additional costs in the form of taxes can be anticipated; while, if these taxes turn upon the industry in the hope of substantial revenue from it, a real threat to the economic health of this industry can easily be realized. . . . The great hope of reducing costs is in the field of ground costs rather than flight costs. It would be presumptuous of me to point the way as to how such reduction can be realized, but the need and the opportunities in this field are apparent. Indeed, the railroads can teach us much here, and wise business inside can add its contribution."

The airlines today are faced with their greatest crisis. No realistic airline management will deny that.

Because of the unique character of this business—its decentralization, its untrained employees, its lack of precedent on which to rely, its lack of adequate ground handling equipment, its lack of airports, its lack of installed radar and radio glide path equipment, and most importantly, its lack of proven aircraft which will not become obsolete in a very short period of time—airline management must develop entirely new and better techniques for controlling its operations.

Control techniques applicable to the complexities of airline operation are equally applicable to the decentralized operations of other industries, modified, of course, for the peculiarities of given circumstances. The techniques about to be discussed have been proven by the Army Service Forces and the Navy, as well as, by United Airlines and TWA. Thus, there can be no question of their validity.

Principles of Control

Before discussing techniques of control it is essential to understand the four basic principles of control which are:

One. Objectives or the ends to be accomplished.

Two. Policies, plans and procedures—outlines of what, who, where, why, how, and when the objectives are to be reached.

Three. Standards—values representing the performance expected in order to carry out the procedures and against which present and future performance can be measured.

Four. Appraisal—the actual measurement of results. Control is established through the following:

1. Organization
2. Policies
3. Plans and Programs
4. Forecast
5. Budget
6. Statistics
7. Reports
8. Methods
9. Standards
10. Simplification
11. Physical Assets
12. Forms
13. Manuals
14. Internal Auditing
15. Control Through Solution of Special Management Problems
16. Control Through Special Management Research

Organizationally, the medium for affecting control is through the Control Unit, the head of which reports to the Chief Executive Officer. In the Army Service Forces, the Control Unit reports to the Commanding General. In the Navy, the Control Unit reports to the Secretary of the Navy. In the United Airlines, the Control Unit reports to the top Administrative Vice President, and in TWA the Control Unit, as originally established, reported directly to the Executive Vice President.

One. Control through Organization

Control through organization and organization structure is the oldest and most direct form of corporate control.

Individual executives and agencies are able to devote their full time, energies and abilities to effective discharge of proper functions only when they know and understand thoroughly their respective parts in the whole picture of management.

A definite, well-thought-out and complete organization structure is necessary if the following malconditions are to be avoided: overlapping functions, duplication of effort, confusion, friction, and working at cross purposes.

The Central Control Unit is the logical agency for carrying out the functions relating to organization which facilitate the most efficient and effective management and control of a business.

Two. Control through Policies

Also of great importance in controlling corporate activities are the ideals, objectives, and policies of the enterprise, which must be clearly stated, promulgated, and understood if the most efficient and effective results are to be obtained. Again centralization of this responsibility in the Control Unit is logical because of its close relationship to other managerial control problems.

Policies, including objectives, constitute one of the primary instruments for coordination and control of corporate activity. Policies provide for consistency of action; if these are not understood and followed, current operations are not effective and desired ultimate objectives are not likely to be reached.

Policies are the laws of the corporation and, in a sense, parallel the laws of a democracy. *Basic policies* are the company's "constitution" and establish long-range objectives, chart the destinies of the company, and furnish the general framework within which lesser policies must be promulgated. The formulation of the

basic policies usually is the responsibility of the Board of Directors, the chief executive, or a group of top executives. *General policies*, which correspond to legislative enactments or laws, are policies of short range or average operating significance, which affect some or all divisions of a company. Authorization of such policies usually lies in the general management group, and may also be formulated there. Finally, there are the *departmental policies*, which may be thought of as municipal ordinances. These must not conflict with either basic or general policies or with the activities of other departments.

These three groups of policies constitute the laws of the corporation.

The Control Unit is the logical agency for compiling, analyzing, and publishing the company's policies.

Three. Control through Plans and Programs

Closely related to control through policies is control through plans and programs. In any company, not particularly in a rapidly developing company, it is absolutely essential to coordinate and control its plans. Planning premises should be compiled and published so that executive thinking will be coordinated and each executive will "sing the same tune out of the same book."

Furthermore, as new plans are developed in the various departments or organizational units of a company, it is necessary to see that they are properly coordinated and do not conflict with established planning premises. Obviously, there must be no gaps in the company planning and the completion of various plans must dovetail properly at the right time.

It is also necessary to keep executives informed of the progress of the various plans and their present state of completion. Thus, a system of program control is called for.

It is, of course, the function of departmental executives to make and carry out plans.

Four. Control through Forecasts

Closely related to but distinct from planning is financial forecasting. Forecasting, properly understood, is primarily a problem of applied economics. By means of the forecasting technique, management is guided in laying its most important plans, establishing its long range policies, and generally charting the destiny of the corporation.

Forecasting involves the interpretation of the probable effect of general economic and business conditions on the future operations and earnings of the company.

It involves an interpretation of the probable effect of the corporations present plans, policies and activities on its future in the light of anticipated conditions and events.

Five. Control through Budgets.

Though not widely adopted and properly applied, one of the recognized techniques of management control is the budget.

The primary purpose of budgeting is to aid in systematic planning and control of company costs from period to period. Incidental to this purpose, the budget sets up in writing a performance objective for each activity, and affords a medium for comparing actual performance against planned objectives.

The budget is a principal means for carrying company plans, policies, and objectives down to operating levels.

The budget is of prime importance in maintaining cooperation and coordination within a company. It tends to unify plans and operations, and to focus attention of all concerned on the objectives it defines.

It assists greatly in making operating personnel "cost conscious." In this way, it aids in increasing the effectiveness of supervision and the degree of accomplishment attained in comparison with objectives.

Because of the necessity for keeping top-management closely advised on budgetary matters, and because of the necessity for close coordination between budget work and phases of methods engineering involving investigations and analyses looking toward improvement in methods and practices, the responsibility for budgets is logically placed in the Control Unit.

Most important, it is a basic mechanism for controlling costs and results—control unit objectives.

Six. Control through Statistics

Statistics comprise one of the best devices developed by modern management for establishing control over corporate activities, and constitute a major means for controlling revenues and expenses.

Statistical comparisons of revenues, expenditures and other data between periods of time (months, quarters, years) and between companies in the same competitive field, reveal variances and indicate trends that provide bases for investigation and constructive action when the necessity for such action is indicated.

In addition, statistical data serve management in other ways and facilitate many management functions.

Seven. Control through Reports

The fundamental value of reports to business has been established beyond question. However, management must necessarily determine what reports it requires in order to authorize the collection of additional data and to abolish reports which are no longer required. Such elements as the availability and accessibility of basic information, transcription, filing, simplification, standardization, and procedures used in the collection and compiling of reports influence their cost and value.

Accounting, statistical, technical and other reports in a large corporation are voluminous and, unless condensed and interpreted by a capable agency having a management viewpoint, can seriously handicap or bog down the managerial function, and even, in fact, lead to erroneous decisions which may have important effects on the course of the business.

Certain reports may ideally serve the purpose for which they are designed or the needs of the executive for whom they are prepared. All or some of the information contained in these reports may be of interest or value to top executives, but, in the form in which presented, the information may be too inclusive or otherwise unsuited for top management attention and consideration. Obviously, most accounting and statistical information should not be transmitted to busy executives in a raw or undigested state. Executives are materially benefited by having reports re-interpreted and condensed for their use.

This function of report analysis, condensation, and presentation is performed within the Control Unit.

Eight. Control through Methods

Methods engineering is a relatively new managerial technique, not widely understood because of its comparatively recent development, particularly in its application to executive and administrative methods and procedures. Methods engineering is the technique that subjects each activity or related group of activities to close analysis in order to eliminate every unnecessary operation and in order to determine the quickest and best method of performing each necessary operation.

It is the means for establishing requirements as to facilities, machines, and manpower. By employing methods engineering techniques, determination can be made of the space required, the machines required, and the men required to carry on a given activity or related group of activities. "Methods engineering" is generic and includes procedure analyses, motion study,

time study, rate setting for incentive purposes, and the like.

Efficiency and effectiveness in the carrying out of the work of any business enterprise can only be assured if existing methods and processes are subjected continuously to searching and systematic analyses and appraisal. It has been demonstrated repeatedly in many companies that it is necessary from time to time to inspect the work actually being done by each corporate segment in order to effect proper control over, and bring about maximum efficiency in, functions, methods, and manpower.

Careful analysis will establish the one best way for handling a given activity. This is the foundation on which the structure of standards must be erected. Without scientifically determined standards, no true measure of the efficiency and effectiveness of results can exist, and, instead, makeshift standards, such as historical costs, must be utilized.

Nine. Control through Standards

Methods engineering is the means for determining the following standards:

- a. *Manhours* required to perform a given volume of work in a standard manner under like conditions at a uniform rate.
- b. *Cost* of doing a specific piece of work—labor, material, supply, and other cost. This is the standard cost of accounting.
- c. *Time* required to perform a piece of work as a basis for improving service to passengers, meeting deadlines, preparing reports, and submitting estimates necessary for planning, scheduling, and assigning work to individuals, departments, and other organization units.
- d. *Quality* (or accuracy) expected, prescribed within limits of other established standards.

With manhours, cost, time, and quality standardized in all practicable instances throughout the organization, control over operations will be facilitated.

The purpose of standardization is to promote the most efficient and economical uses of the energies and facilities of the business to the ends that 1) labor can be made more effective, 2) more satisfactory service can be rendered passengers and other customers, and 3) a larger net return can be earned on the capital invested in the enterprise.

Managerial standards formulated for and used in the direction, control, and coordination of management activities include the following:

a. *Financial standards*—Yardsticks and relationships constructed from balance sheets, profit and loss statements and statistical reports. In many ways these provide the starting point for the use of many operating standards whereby better control of operations reduction in costs can be achieved. Budgets and statistics are examples of such yardsticks and relationships.

b. *Operating Standards*—Standards of individual and group performances of men, machines, and methods each form a vital mechanism in the managerial control of departmental and other unit activities as well as of the costs of conducting those activities.

c. *Standards of Procedure*—Standards designed to bring about the improvement and maintenance of systems and methods for performing necessary work and to aid in the building of routines in order to free executives from detail.

These standards apply in varying degrees to every organization unit of the company.

Ten. Control through Simplification

Simplification is another result achieved through methods engineering. Simplification is applicable throughout the company and applies to procedures, systems, work methods, furniture, fixtures, office machines, and all practices wherein it has value. In order to increase efficiency and to gain the savings and other advantages available through proper application of the principal of simplification, careful study of all elements and requirements must precede actual change. Simplification necessarily precedes standardization.

Eleven. Control through Physical Assets

Suitable structures, appliances and equipment and tools are necessary for rapid and efficient work. Because the investment required in many fixed assets is substantial, it is apparent that such investment should not be made unless it is definitely established that resulting savings or other benefits warrant such investment. Furthermore, because of the desirability for standardization in large companies, new assets involving like units of significant costs should not be purchased until it has been determined whether ultimate standardization is possible and desirable.

It should be borne in mind that the Control Unit concerns itself primarily with appliances, furniture, machines, equipment, buildings and other real estate from the functional standpoint, or only where the management engineer is technically qualified to pass judgment. In other instances, the management engi-

neer will, wherever necessary, work with the aeronautical, radio, or other engineering department or other organization possessing the technical knowledge and skill. In further elaboration, the management engineer does not pass judgment on aircraft, aircraft appliances, radio or radar equipment, and the like.

Twelve. Control through Forms

Any method or procedure implies the use of forms. Forms are the media by which transactions and data are recorded, transmitted, and preserved, and through which control is effected over various phases of business activities. Forms cost money to prepare, distribute, correlate, analyze and summarize. Obviously, unnecessary forms, improperly designed forms, forms otherwise inadequate, result in waste and should be corrected and eliminated.

The use of forms grows with the size of a business organization. As the number of forms needed increase, some method of control must be set up. This control involves the reorganization of the entire structure of forms through a systematic and careful review and improvement of all forms currently used, the elimination of those which are, or have become useless or obsolete, and the setting up of a definite procedure for the approval and preparation of all new forms.

The administrative set-up of form control requires centralization, and it is logical for such centralization to be in the Control Unit, since, as part of the performance of methods engineering functions, all forms used in any organization unit must be examined and a determination made of the purpose for which each form is used, who prepared it, how, why and when it is used.

Thirteen. Control through Manuals

By preserving the results of methods engineering studies in written form, continuance of benefits is insured.

Experience has shown that unless information and records describing procedures are carefully made and preserved, variations usually creep in, and, in time, cause a major problem. Procedures must be established in written form to insure that methods will be followed and that standards will be met.

Written procedures, particularly where these have been method studied, simplified, and standardized, reduce variations from normal to a minimum, thus facilitating supervision and enabling executives to concentrate attention on matters which are exceptional

Wherever procedures have been standardized and reduced to writing, interchange of personnel is made possible through manuals with no reduction in proficiency and no loss of time or learning.

The time spent in breaking in new employees is reduced to a minimum, saving time of both supervisors, associates, and trainees. This is particularly true where written procedures are provided for each specific job or job unit.

Where activities are of a repetitive character, it is better and safer for management to fix methods definitely in writing than to depend upon the uncertainties of memory and variable judgment of those involved in the activity. Only by prescribing fixed and written practices can consistency and permanence be given to the conduct of company activities.

Another thing: unless basic operating data is put into writing, certain portions of it are lost every time there is a changeover in personnel.

It is apparent that the necessity for stating in writing the standardized procedures established by the methods engineer, as well as the need for written procedures to maximize labor effectiveness, places this function within the orbit of the Control Unit.

Fourteen. Control through Internal Auditing

Modern internal auditing is one of the most effective appraisal techniques yet developed by management. Modern internal auditing is not the narrow checking operation its name implies, but rather the examination of the functioning of organization units to determine whether or not established methods, policies, procedures, and practices are being followed, and whether they are being followed both effectively and efficiently.

Let us be clear on this point: Internal auditing is not auditing as usually understood. Auditing is usually understood to mean the science of verifying the records and reports which reflect the financial condition and operating results of a business.

Internal auditing, on the other hand, is a much broader activity. While auditing as generally understood—and as just defined—is *one* of the activities of the Internal Auditor, his work is not confined to just that. The Internal Auditor's job, in addition, embraces surveys of operations and personnel as well as the review of accounting and other data and records. In fact, routine auditing is in many instances the least significant part of the Internal Auditor's work.

Only in the very recent past has internal auditing been recognized in its true light—as a control device of top management. Today, those who understand it

recognize it as a technique for providing top management with many important facts it would not otherwise have; for insuring adherence to budgetary standards; for securing observance of company policies; for establishing adherence to laws, regulations and contract terms by officers and down-the-line executives; for calling attention to the inadequacy of many types of physical property and to the lack of propriety in their use; for weeding out incompetent personnel and for high-lighting talent; and for following up the work of other Control Unit personnel by seeing that new methods, procedures, and practices, once installed, are maintained.

Internal auditing is the follow-up device which makes methods engineering fully effective. After methods improvements have been installed in a given organization unit, the methods engineer concerns himself with other tasks. On the other hand, the Internal Auditor, in his routine function of verifying the handling of all transactions, and the care exercised over corporate assets, ascertains that newly established methods are being followed. The Internal Auditor also ascertains that policies are being observed, that layouts and organization structures are being maintained, and that other results are in conformity with management's directives.

Fifteen. Control through Solution of Special Management Problems

Top management is continuously faced with problems of a nonrecurring nature to which no established line or staff agency is equipped to find a solution. Some of these problems involve fact-finding limited to the ascertainment of isolated factual data. Some of these problems are broad in character and involve protracted surveys and accumulation of facts not previously ascertained or available. Again, some problems may be solved within the corporate organization by utilization of available trained personnel or through assembly of scattered data. In such instances an organizing agency is required for the assembly of facts, data or other items needed to solve these special management problems.

Management is also faced from time to time with problems that require the services of "trouble-shooters." In some instances, such trouble-shooting may involve the ascertainment of factual information as a check against conflicting or otherwise authoritative opinions. Instances arise where an impartial arbitrator is necessary to weigh conflicting data in order

to resolve such conflicts and arrive at conclusions and recommendations for top management consideration.

Fact-finding is an established and recognized function of the Control Unit.

Sixteen: Control through Special Management Research

Scientific management is taking the place of the rule-of-thumb school of management which previously predominated. But it must frankly be recognized that the managerial function is still in the process of evolution.

In any new and expanding corporation, and most particularly when that corporation is situated in a new and expanding industry, the function of management must receive continuing attention if it is to be kept scientific and up-to-date. It should be recognized that where there is corporate growth, all essential activities should be provided for, particularly new ones as these arise. Not only that, but management must make certain that the growth of the corporation either in size or complexity does not so burden executives with responsibilities that they are no longer able to discharge their duties properly.

Thus, a principal function of the Control Unit is to keep top management informed at all times of the most advanced thinking on management problems and

managerial control, and to recommend ways and means for inaugurating new methods and techniques wherever these are applicable to the company's operations.

The foregoing techniques of control have proven themselves out in TWA. In a little over two years time the Control Unit has been established, it has shown the way to savings of roughly ten million dollars. By far the greater portion of these savings have yet to be reflected in operating results, but they are there.

Many of the results of the work of the Control Unit are not measurably in dollar savings. For example, new methods of handling reservations, ticketing and aircraft on the ground will result in better service to the airline passenger. A four-point program for testing, job evaluation, training, and merit rating will result in increased employee morale and bettering service. Through the work of the Statistical Department, schedules with low load factors have been revealed and resulting rescheduling has brought increased revenues which are not included in the dollar amount of the savings indicated.

Most important of all, management has been supplied with the tools that it requires for controlling its decentralized operations. If or when TWA puts into effect all of the recommendations made by its Control Unit, it will be an outstandingly efficient airline.

Need for Scientific Study of Human Relations in Industry

By E. WIGHT BAKKE

Sterling Professor of Economics and Director, Labor and Management Center, Yale University

FROM the days of Robert Owen there have been employers of labor who considered that human relations in their plants were of equal importance to mechanical engineering, financial manipulations, and market analysis and procedures. To them the study of and provision for their employees was as vital to successful enterprise as the efficient handling of materials, tools, and products. These prophets have a large following today. Their convictions about the value of human engineering and management's opportunity and responsibility in this field have widespread approval. From all sides we hear employers saying, "We have a pretty good grasp of technological problems, but the problems of human relations in industry are still pretty baffling. We've got to lick the problems in this field if we want private enterprise to survive."

But where are the human engineers who can help with this job? Interest in the problem is a good beginning? Native intelligence, common sense and experience will carry a man a long way; and anyone who lacks those elements won't get very far. But scientific research, a carefully and slowly developed body of systematic principles, and formal training are as important in human engineering as in mechanical or electrical engineering.

A lot of sound work is being done by researchers and practitioners in some corporations, management associations, unions and universities, and by a few consulting firms. But the growing interest in human relations has attracted a host of quacks into the field also, as many an employer can testify. The basic difficulty, however, does not lie in the lack of integrity among so called experts, but in the lack of a basic, commonly accepted, and usable theory of human behaviour. Until we have it out experiments cannot produce a cumulative wisdom which furnishes a standard for distinguishing sound from unsound conclusions and gives a foundation for education and action in human engineering. One cannot understand the facts of mechanical equipment and its operation without engineering theory. Is it any more reasonable to suppose that one can understand the facts of human relations

and reactions without the use of a satisfactory theory of human behaviour?

You are constantly called upon to do something about the behaviour of your employees and the union leaders with whom you deal. Some of that behaviour is good, some of it not so good from your point of view. Morale in the shop is good, production is booming, workers are putting their shoulders to the wheel with enthusiasm, your employees stick with you, union leaders are cooperative. Why? How do you keep things that way? Morale in the shop is low. Production is going down. Absenteeism and voluntary quits are high. Why? What can be done about it?

You must continually estimate the effect of your decisions and actions upon the behaviour of other parties with whom you are associated. You are aware that union leaders and workers will react favorably or unfavorably. How they react is important to the success of your decision. How can you understand what the reaction will be and why? How can you predict what the others will do about it?

The Most Serious Handicap

These problems occur every day. One of the basic things you need to know in order to plan your own course wisely is the answer to the question, "*Why do men behave as they do?*" It is difficult to answer that question without a theory of adaptive behaviour, in other words without a sound understanding of what makes men tick and why.

I am convinced that the lack of a usable theory of adaptive human behaviour is our most serious handicap to the development of sound strategy and policy in industrial and labor relations. I have long since ceased to feel embarrassed about talking of the need for a theory of human behaviour to men who are involved with the practical problems of human relations in industry. Theory is not more academic to them than it is to the production engineer. They are using theory every day whether or not they call it by that name. Their theory is a set of generalizations or hunches from their experience. It is deeply rooted in their convic-

tions for that reason and important for that reason. The purpose of scientific research and theory is to broaden the area of experience against which these hunches can be checked, modified or substantiated by reference to that experience.

A theory does not become academic just because it is an attempt to summarize a broader area of experience and experimentation and reduce it to systematic form. Indeed this process should be the most practical thing in the world. We do not call the doctor practical who limits his diagnosis to his personal hunches. Nor do we call the one academic who makes a systematic diagnosis on the basis of widespread clinical experience and of tested medical theory.

I wish it were possible for me to lay before you a tested theory of human relations which you could use to diagnose human relations problems. I can't do that. One reason it is hard is that students in this field have approached the problems of industrial relations as specialists. Inside industry, they have analyzed the problems as production engineers, efficiency experts, incentive wage experts, lawyers, and paternalists. Both inside and outside industry they have studied the problem as psychologists, sociologists, anthropologists, economists, or prophets of Utopia. The problem is too big for any one of their specialities. It is always spilling over into the jurisdiction of some other specialist. We have got a lot of useful insights into the problem from those efforts. But the insights don't add up to a clear cut definition of the problem or a widely applicable plan for studying it, or a usable program of action which can preserve or restore healthy industrial relations. In order to use effectively the skills and brains of these specialists, we need to define the problem and develop a pattern for analyzing it in terms broad enough so that we can see where the knowledge and insight of each one fits in and what each has to contribute. If we can do that in a sound way, the understanding developed from surveys and research should suggest the program of action which practical men can develop to solve their problems. The results of that practical action in turn will test the research conclusions. Thus we can develop a cooperative and fruitful relationship between researchers inside and outside industry and practitioners similar to that existing between chemists, physicists and engineers, or between biologists, physiologists and doctors.

Ivory Tower Theories

In our field this cooperative activity is particularly important. Many of us who are labeled social scientists

recognize this. We can't develop workable and useful theories of human behaviour in an ivory tower whether the tower is a research department of a company, a trade association, a union, or a university. The facts we study are produced by human activity which we have to know first hand. Our conclusions have to be tested and verified in the laboratory of realistic behaviour in the factory, the union offices, the community and the legislatures.

If we need each other, how can we get together? I have said that the first two steps were to answer these questions:

- a. What is the definition of our problem?
- b. What plan of study and analysis will take into account all the factors that bear on that problem?

At this point you very properly ask, "Well, what have you to suggest?"

In cooperation with many employers and union leaders we've been trying to get answers to those questions at the Yale Labor and Management Center and the Institute of Human Relations. The answers are the product of our attempt to make sense out of a large number of observations made since 1932 of how people acted and why, when they were involved in practical situations in the field of industrial and labor relations.

Analysis

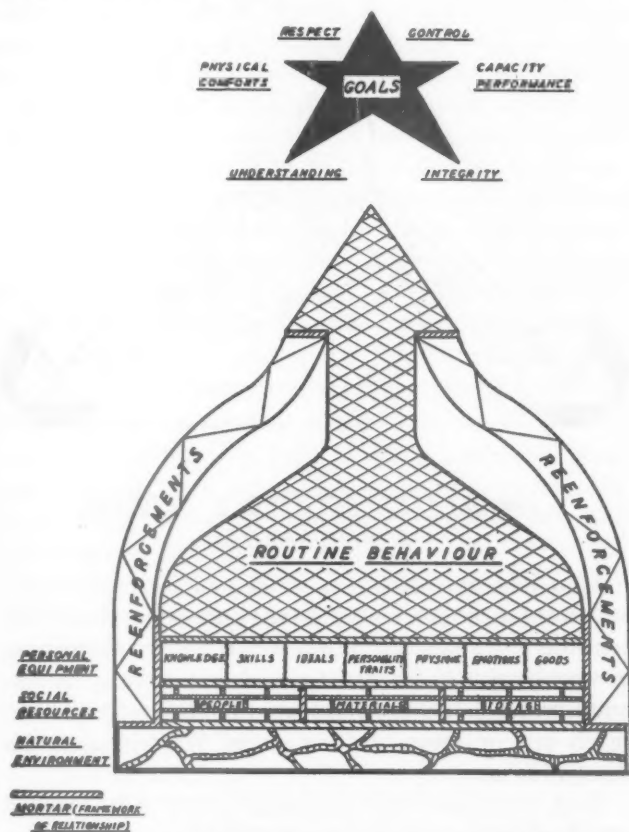
Let me suggest very briefly then what progress we have made in defining the problem and developing a plan for studying it. If you are interested I shall be glad to send you a somewhat more ample description of that pattern. But remember it is very preliminary, that it needs your criticism, and that above all its validity can only be tested by actually putting it to work in analyzing practical situations of human relations in industry. I hope that some of your companies and the Labor and Management Center may set up joint projects for such analysis to our mutual advantage.

We can probably agree on a statement of the basic problem without much difficulty. The questions to which we are seeking the answers are, "Why do people behave as they do? What are the forces and factors which motivate and determine their behaviour? How can we perpetuate the causes of desirable behaviour? How can we eliminate the causes of undesirable behaviour?"

Here are a group of men you are working with or for. What causes them to act as they do? What do you have to look for in order to answer that question ade-

quately? The answer I would like to suggest involves some very elementary principles of psychology and anthropology. There is nothing new about these principles. The only claim to originality is the way they are put together to provide what we hope will be an increasingly useful plan of diagnosis.

We start with this simple proposition: When you observe the routine behaviour of an individual or a group of individuals what you see is a set of practices that are what they are *first* because they are meant to get results in helping people to reach the goals they want to reach, and *second* because the people have to work with the particular personal, social, and natural resources that are available to them. What they customarily do, therefore, is determined first by what their goals are and second by what their resources are. Routine behaviour has to be more or less consistent with these determinants.



STRUCTURE OF LIVING

This chart may help you to visualize that simple proposition. The broad based arrow represents routine behaviour. The star represents the goals people have. At the base of the arrow are the three types of re-

sources, personal, social and natural. Those resources are pictured as bricks and stones and the mortar that binds them together. We can't label the point of the star and the separate bricks in detail here but anyone who wants to understand why human beings behave as they do ought to have a pretty complete knowledge of what they are. In our studies we have identified six goals that have been of major importance in the many cases we have studied. Men want to experience security, progress, and justice with respect to the attainment of the following goals:

1. *Respect of fellows*

The desire to play a socially respected role.

2. *Creature sufficiency*

The desire to have that degree of creature sufficiency (food, clothes, shelter, health, etc. and the means to provide them) enjoyed by the most favored of one's customary associates.

3. *Increasing control over one's own affairs*

The desire to have one's decisions and actions effective in shaping the course of his own life and to reduce the control exercised by others.

4. *Understanding*

The desire to comprehend the forces and factors that operate in one's world, to "know the score."

5. *Capacity performance*

The desire to utilize in living the full range of capacities possessed, both actual and potential.

6. *Integrity or wholeness*

The desire to experience consistency within one's self, among the parts of one's world, and a significant relationship to that world.

The bricks in the layer of *personal equipment* include such items as knowledge skills, ideals, personality traits, physique, emotions, and goods. They are held together in the individual by mortar which we can call character.

The second layer is made up of *social resources*. In general there are three types of bricks in this layer, *people*, *materials* (that is tools, plant, technical devices and other material resources) and *ideas* or the stock of knowledge. But of equal importance to these bricks is the social mortar that holds them together. For example, look at your company as a small society. *People* in it are geared together in a working group by a framework of relationship which I have called social mortar. They are related by a *status system* which suggests who gives and who gets deference, who has and who yields

to authority. They are related by *job definitions and requirements*. They are related by a *communication system*. They are related by a *system of rewards and punishments*. They are related by an *organizational charter* or a concept of the objectives, achievements, policies and structure of the organization itself. People are related to materials and materials to each other by *technology* and by organizational set up and facilities. People are related to ideas by *thought-ways* and are brought into contact with ideas by the *educational system* formal or informal.

The social mortar which holds these resources (or bricks) together and relates the individual or a group to them is an important part of the structure of living.

The basic layer of resources is the rough stones that make up the *natural environment*, the climate, the seasons, the soil, vegetation, minerals, etc.

The Structure of Living

An important part of the factors that determine behaviour is represented by the supporting structure (the *reenforcements*) which is pictured as bolstering the behaviour and the resources. It is made up of codes, philosophy, folklore, slogans, ritual and the like, which reenforce things as they are and the habits of action, making them regular, dependable, and right in the eyes of the people involved.

I call this whole complex of goals, routine behaviour, resources and reenforcements, the *structure of living*. Our lives are lived within it and our normal behaviour is what it is because of the nature of that structure.

In a sense each of us has his own. But all workers, all management, all union leaders, share with their own groups a structure of living which is different in important respects from that of the other groups. And to understand their actions you have to see them as produced by the shape and character of and the elements in the structure of living of their own group.

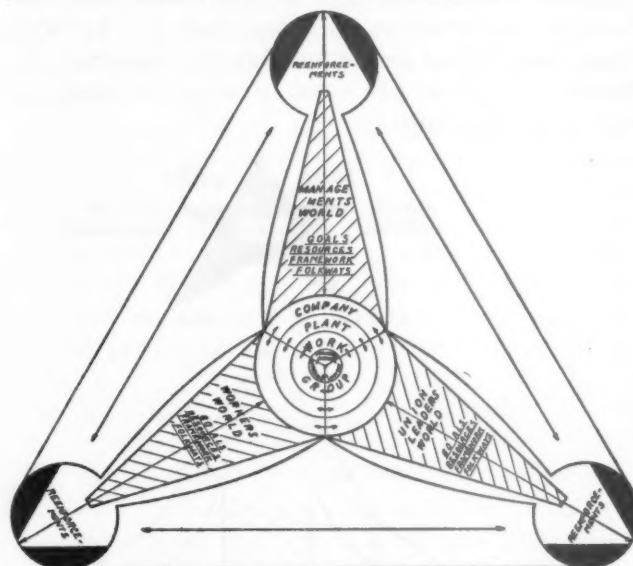
The second chart pictures that situation. Within the boundaries of the circles, the department and the plant, workers, union leaders, and management have relations with each other in doing jobs. What they do is in part a response to the facts they face there. But their action is also determined by the structure of living they share inside and outside the plant with others of their own group. You have to understand the other fellow's action by studying his own structure of living, not yours. There is no more misleading clue to why he acts as he does than the question, "How would I react to this problem?"

I've taken a long time even to give this incomplete

description of the structure of living, these goals toward which normal behaviour of a group is directed, and the resources with which it has to be more or less consistent. That is because it is basic to the next proposition I wish to present.

When this structure gets *out of equilibrium* for some reason, men are stimulated to try out some kind of experimental action which they think will restore the equilibrium. The disequilibrium creates in them *tensions* and *anxieties*. They try to reduce those tensions and anxieties and get a sense of security, progress, and justice with respect to the attainment of their goals.

STRUCTURE OF LIVING



IN IMMEDIATE, RELATED & GENERAL ENVIRONMENTS

Men join unions, go on strike, soldier on the job, stay away from work because they are trying to reduce tensions and anxieties they experience when something is wrong with their structure of living. It is in disequilibrium. They are frustrated in their attempts to reach one or more of their goals. What causes the disequilibrium?

Well, their *goals may have undergone a shift*. The old standards of successful living may no longer hold. The old routine behaviour that was doing the job satisfactorily in reaching the old goals leaves them far short of the new ones. Managers of men will do well to keep themselves abreast of developments along this line, changes in the way their workers define their objectives, what they want to get out of life and work. You

can't control all the forces that stimulate those changes, but you are working in the dark unless you know what they are.

Another reason for the disequilibrium may be that some *resource or resources are inadequate*. *Skills or knowledge*, for instance, may not be sufficient to enable men to do what they would have to do in order to realize their goals. Management cannot supply facilities that will correct all the deficiencies that exist in the personal equipment of their workers but training and educational programs are used effectively by many firms to do a part of the job. *Personal possessions* and income may not be adequate. Wages paid and security benefits are basic factors in determining the adequacy of personal possessions.

Management can do much if the inadequacy is in the *social resources* which are made available in the factory. Suppose the inadequacy is in the *people*. Management is composed of people who are an important part of the worker's environment. The selection and placement and promotion of supervisors and fellow workers, with an eye to compatibility and harmonious group relations, is a function of management.

Much of the *social mortar* that holds people in the plant together is mixed on management's specifications. The hierarchy and rules of deference and authority, that is the *status system*, the *communication system*, the *job requirements*, the *system of rewards and punishments* including wage payment methods, promotion schedules, etc., are greatly affected by management decisions. If they are inadequate management feels itself largely responsible.

So it is with the impersonal resources in *tools, plant, and materials* and the *technology* by which they are geared together and with the use of which workers and management manipulate them.

The general stock of *ideas* available in society receives many contributions from management, but the contributors past and present are legion.

Management can do very little about the adequacy or inadequacy of the natural environment and the resources that it offers to human beings.

Fundamental Cause of Disequilibrium

Any *inadequacy* in these resources or the social mortar that holds them and the individuals together is a fundamental cause of disequilibrium in the structure of living and the anxieties and tensions resulting from it. When the bricks are cracked or missing, or the mortar doesn't stay in place, workers try to correct the situation and get their structure of living back into equilib-

rium. If their action is bad from management's point of view, that management is best prepared to handle the situation which is able to spot the inadequacy and take steps to put it right.

Another cause of disequilibrium is an *inconsistency* between different parts of the structure. A few examples of such inconsistencies which have proved to be a cause of trouble in some of our studies to date will have to suffice. In one plant the *job requirements* were redefined. But the *communication system* providing for clearance between men doing the various jobs was not changed. The old communication system and the new job requirements didn't jibe. In a textile mill a *technological shift* in the way the looms were operated resulted in *job requirements* which destroyed the *status system* formerly built up among workers and between workers and foremen. When the union came into another plant in the rubber industry the new *organizational set-up* to take account of this fact was out of gear both with the foremen's *job requirements* and their place in the *status system*. In still another plant the promotional scheme and the incentive system that is, the *system of rewards and punishments* was incompatible with the *philosophy* of the workers with respect to the worth and dignity of individuals.

These *inconsistencies* keep the parts of the structure of living from fitting well together, make it unstable, and promote a disequilibrium. The workers are impelled to try out actions which they think will restore the consistency. It will be difficult for management to spot these inconsistencies unless they look at the problem through the worker's eyes. For it is the disequilibrium in the worker's structure of living that produces tensions and anxieties in the worker.

Let me name only one more cause of disequilibrium, a *threat* from some source to the stability of the worker's structure. The possibility of unemployment or unsteady employment is a threat not only to the worker's *personal resources* in income and material possessions, but to his *skills*, his place in the *status system*, indeed to almost every element in his structure of living and hence is an obstacle to reaching every one of his goals. To union members certain actions of employers may appear as a threat to the *organizational set-up* and the group solidarity of their union. Many a strike has been prolonged beyond the point of immediate economic advantage to workers because of the determination to resist what is felt to be a threat to the stability of the union organization. Many a worker and union leader has resisted a change in the method of wage payments (i.e. a part of the *system of rewards and*

punishments) because they were familiar with the kind of techniques which were getting them satisfactory results under the old system and didn't want it destroyed. A rearrangement of *job assignments* may be a threat to *symbols* in terms of where a man worked, or what kind of equipment he used, and is resisted because these symbols reinforced a man's place in the *status system* which gave him a certain amount of authority and an expectancy of deference.

Changing goals, inadequacies, inconsistencies, threats, these are major causes of disequilibrium in the structure of living which produce tensions and anxieties. The attempt to reduce these is the chief cause of adaptive behaviour. I have talked about workers' behaviour, but you could interpret much of your own adaptive behaviour in the same way.

Conclusion

Even in the preliminary form that we have developed at the Labor and Management Center to help us make sense out of what we have observed workers, union leaders, and management to be doing in practical situations, we have set down nine propositions or hypotheses. I have left out some of them and ruthlessly telescoped the others because I was trying to illustrate a point.

That point is this: there is a rapidly growing concern among managements and union leaders in the thorough understanding of human relations in industry. It is not stimulated so much by humanitarianism and paternalism as by a recognition that intelligent and effective running of industries and unions has to be grounded in a thorough and if possible a scientific understanding of why people behave as they do. But interest is not enough. If it is expressed in well intentioned guesses, or hunches, or preconceived notions, or traditional philosophies, the chances of success are as slim as the chances of a doctor curing a case of diabetes or a builder constructing a Boulder Dam by the same method. Interest can be abortive as well as constructive.

Scientific study and analysis is required and that process is neither quick, simple, nor easy. We won't make much progress until we have a sound core of behaviour theory to guide us which can be developed, corrected and amplified by every experience and experiment. The first step in that process is to get a pattern for diagnosis which at least suggests all the factors that have a potential influence on behaviour. I have been trying to suggest what such a diagnostic pattern would look like.

To anyone faced with the task of explaining or predicting behaviour with respect to a particular issue, however, the facts needed may appear to raise a staggering number of questions. He is likely to throw up his hands and say, "Eternity itself would not provide time to answer all of these adequately. Long before that, the time for action would have passed. I have to decide my course of action today, tomorrow, next week, a month from now. Reduce the number to manageable proportions."

The practical man is right. But let us not discount too quickly the value of the more systematic diagnosis. Snap judgments are time conserving—IF they are right. There was a time in medical practice when diagnosis was simple. It still is in primitive societies. If a man has a stomachache or an earache or a paralysis of the left side, it is because he has a devil in him. Ritualistic means were devised for getting the devil out. Not unrelated to that diagnosis, but making use of some advance in the knowledge of the human body, was the diagnosis of too much or poorly distributed blood. The simple remedy was blood-letting. I suspect that medical practitioners of these earlier days would have been staggered by the data and theory required now for intelligent treatment of the simplest ailments.

But a beginning must be made. And if knowledge and wisdom are to be cumulative, it is desirable to have a pattern for thinking into which the nature and significance of each new observation can fit. Systematic and growing understanding of complicated details is not impossible. The period for exploration of the relevant facts, for instance, varies. Some decisions can wait upon a careful study of the circumstances that will determine human reactions, and are so important that such exploration will pay dividends. In other cases intuitive immediate action is more important than deliberative postponed action.

Although a doctor may be aware that reaction to an operation will depend upon the whole structure and dynamics of the body, the need for the operation may be so acute that an elaborate charting of that structure and dynamics would involve time which cannot be spared if the patient is to live. Nevertheless his science is sufficiently well organized so that he is aware of the *major* facts he has to get before proceeding, those that are vitally related to the present ailment. The theory of physical structure and functioning is sufficiently adequate to enable him to run over quickly the important things he must know and the reactions he can expect in the light of that information. Because his pattern of analysis is relatively stable, the experience

he gains in this new situation can be fitted into that pattern. His experience is cumulative, and his next case is attended by a man whose understanding of the principles of physical reaction has become more nearly adequate.

These hypotheses I have been discussing might be called guides for learning, a pattern for investigation or diagnosis. Even as a check list of matters to be taken into account, as a roster of possible factors which may influence behaviour, they should prove useful. If considered in each recurring situation as a supplement to what the diagnostician is trained by experience to look for, the study and thought, however limited, should produce a cumulative understanding, making future action, though based on quick intuition, more effective.

I have one further comment to make on the importance of a commonly accepted and used theory of adaptive human behaviour. There are many examples of successful operation on the part of management and

union leaders in producing a healthy situation in industrial relations. The examples of failures are equally numerous. How can those who succeed and those who fail transmit the reasons for their success or failure to others? Such transmission is the essence of education, the essential factor in progress. Men can learn from each other and act accordingly if they share a common pattern of analysis and use the same terms. Until they achieve that common language, progress toward industrial peace and efficiency in human relations will be accidental. It will depend on the presence in the situation of an exceptionally sensitive and wise and experienced individual who is intuitively aware of the principles of human behaviour. The most important tool for making progress orderly and cumulative is a theory of adaptive behaviour which can be put to practical, widespread use. If commonly used, every user becomes the head of a laboratory in which that theory is corrected by experience and becomes a tool sharpened for future use.

BOOK REVIEWS

Time and Motion Study. By John W. Hendry, Pitman Publishing Corporation, New York, 1945, 215 pages, \$3.00.

Measuring productivity to increase earnings and to reduce costs is getting more attention. Both objectives are desirable and their attainments are greatly assisted by timestudy and motion study. But there are many varieties in both the philosophies and the techniques of these "measuring tools."

More standardization is in order. This is suggested by Mr. Hendry at the start of his new book. However not very much of the contents is given to this phase of the subject. Most of the book is devoted to "how" and, withal, skips along over a wide range of subjects hitting the high spots mostly.

Roughly half is devoted to timestudy and half to motion study. There are fourteen chapters. The first two are general. The next six explain phases of timestudy ending with a chapter on training. Chapter 9 describes the Camera, Chapter 10 Elimination of Waste, Chapter 11 Motion Analysis, Chapter 12 Lighting and Transport, Chapter 13 Training Operators and Chapter 14 Miscellaneous.

Most unusual is Chapter 8 with its 24 pages of training course specifications. An important emphasis in it is that of report writing. A grave omission, as the reviewer sees it, is the adequate training in fundamental principles. Too large a proportion of the thirteen week course is given to "stop watch."

Like a number of recent books in the field, this one also brings out a new system for rating performance. It is based on equating an average of the ratings to an average of the actual times corresponding. The examples make the proposal seem plausible because they are set up mathematically.

The Foreword is written by B. Seeborn Rountree who is known to be a progressive industrialist in England. From this we may conclude that the book itself represents an English version of "time and motion study." For that reason, many will want to read it to find out how methods compare.

PHIL CARROLL, Jr.

Mutual Survival: The Goal of Unions and Management. By E. Wight Bakke, Labor and Management Center, Yale University, New Haven, Connecticut, 82 pages, price \$1.00.

Here is a novel, fresh and penetrating approach to the familiar problem of the relations of management to unions. One feels that the author has come at his subject with wide knowledge but without preconceptions as to the frame in which he thinks. The result is an interpretation of the conduct of managers and union leaders which is at once clarifying and potentially constructive.

The theme of the volume is that managers and unions are both rightfully preoccupied in the first instance with the conditions of their own survival. This leads each group to see problems which both groups have in common from somewhat different angles. As the author states it, "my simple objective is to lay these two sets of ideas side by side to demonstrate the basic nature of the conflict between them and to indicate the prospects for the reduction of this conflict." The essential

problem being discussed is "whether civilized men in labor and management can supplant the techniques required for *self-survival* through domination with the skill and wisdom required for *mutual survival* through cooperation. . . . The result of failure to work out the means of mutual survival will not be the elimination of one by the other but the elimination of both as free institutions by public regimentation."

This book deserves the widest possible study by leaders both in management and in labor because it will lead them to a self-awareness as to motive and method and equally to a sympathetic awareness of the point of view of the other side being dealt with. This study is one able exponent of a new and vital approach to labor problems which, as it becomes more widely understood, should make for an increase of constructive relations. For the upshot of the new way of analysing these problems is a combined psychological and sociological approach buttressed by economic understanding, in which the importance of attitudes, motives, and purposes has the priority of attention. And what we are coming to call the dynamics of group action comes in for realistic description as well as definite prescription for improvement.

The merits of this book are high and are unique.

ORDWAY TEAD

Review of, *Job Evaluation*, by Forrest Johnson, Robert Boise, and Dudley Pratt. Published by John Wiley & Sons, Inc., New York; 279 pages; Bibliography and Index. Price \$3.75.

On the dust cover of this recent publication on the subject of Job Evaluation, we find the following claim, "A book, comprehensive and fully illustrated, which explains the functioning of typical job evaluation programs under actual operating conditions." In the introduction, the authors recognize that the growth and interest of job evaluation in industry has created a need for a text book to explain how a job evaluation plan functions under actual conditions. It is stated that this book has been written to satisfy that need. To the best of our knowledge, there has been no book written to date which more fully satisfies these two claims. The details as to how the Job Evaluation Department was organized, a committee selected, evaluation factors determined, key jobs studied, wage rates proportioned among the factors, factor degrees defined, and labor grades established are voluminous and well presented. Examples are given of a typical factory job evaluation plan, and of a similar plan for evaluating clerical and technical salaried positions. The manner in which the various activities essential to appropriate initiation and maintenance of a job evaluation plan are carried out are covered in chapters specifically related to each activity and containing actual examples of the manner in which each activity was carried out.

There is a chapter on "Employee Merit Rating" which briefly recognizes the relationship between job evaluation and performance appraisal, and provides samples of the forms to be used in this connection.

Those who use this book should recognize it for what it actually is, namely, a case history. Unfortunately, the authors

have confused the purposes of a case history with the purposes of a treatise on the underlying philosophy and underlying principles of job evaluation. There are a number of observations made in connection with the description of certain steps in the evaluation procedure and in connection with the analyses of the various types of job evaluation methods that are subject to serious question as to their accuracy or general acceptance throughout industry. For example, the impression is given that there is no doubt but that the job evaluation function should be assigned to the Industrial Engineering Department, this conclusion would certainly be questioned by any group of personnel administrators. Again, for example, the impression is conveyed that the underlying criticisms of the factor comparison method is its dependence on the use of cents per hour or dollars per month as "points." Furthermore, one receives the impression that the method described at great detail in this book is a new or original combination of factor comparison and point system techniques; actually many factor comparison installations have followed the lines of the methods described, with the possible exception of taking a step that a number of proponents of factor comparison believe to be unnecessary, namely, making more or less subjective definitions for the various degrees of each of the evaluation factors based on the use of qualifying adjectives or adverbs.

This book is recommended as a very clear and informative case history in job evaluation. The reader should be warned, however, against accepting without further research in the field many of the statements covering principle and theory.

SAMUEL L. H. BURK

Personnel Manual for Executives. By Ross Young—
Published by McGraw-Hill Book Company, Inc.
New York—London, 201 pages—\$2.50.

It would probably help anyone to better evaluate this book if it were to be considered as A Guide to Better Supervision, rather than a "Personnel Manual for Executives." Even though, in Chapter VIII, the author tells us that "in the previous chapters the terms Supervisor and Executive have been used interchangeably," it is difficult to accept those designations in relationship to the title when one considers the widely accepted connotation of the term "executive." In the more generally accepted use of the term it is hard to believe, from practical experience, that the contents of this book would either get or hold the attention of business executives.

It would be difficult for an executive, as it is even for a personnel man, to accept the author's thesis, many times emphasized, that industrial supervision is a profession. Actually it has been difficult enough to obtain professional recognition, even in limited areas, for the entire function of personnel administration, of which supervision is only a part.

The book deals less with the principles and techniques of personnel administration than it does with psychology, mental and physical hygiene, and a sort of Robinson Crusoe economics. However, the author apparently does have a particular aptitude for analyzing and itemizing rather profound and involved subjects, and in that respect makes an interesting contribution. This is particularly true regarding leadership qualities, the psychology of supervision, and mechanisms of human nature.

Other readers will probably be as curious as this reviewer was

to account for the suggestion in the Preface that "Chapter XIII, which furnishes the foundation for most of the book, be read first."

THOMAS G. SPATES

The Way to Industrial Peace. Reprinted from Harper's Magazine, November, 1946, 50 cents.

Mr. Peter F. Drucker's study, *The Way to Industrial Peace*, was printed in a series of three articles of Harper's Magazine beginning with the November, 1946 issue.

This is a study of our industrial relations problems today, taking into consideration the opinion of economists, industrialists and labor leaders. In this study, he has endeavored to cover the principal causes of industrial strife, point out the effect that continued conflict will bring about, and offer some solutions to these problems. He has endeavored to show how harmony between management and labor can be maintained by describing how harmonious industrial relations have been achieved in several specific industries.

"There is a very short step," says Mr. Drucker, "from the conviction that labor strife is inevitable and inherent in an industrial system to complete government regimentation of industry and labor. Free society is possible only if the workers support actually and loyally the industrial order."

This is no longer a conflict between capital and labor but rather between management and labor. He mentions as four causes of labor conflict:

"(1)—Managerial unfairness (or the appearance of managerial unfairness) in the handling of contractual relations, especially in the treatment of grievances, in the establishment of wage differentials between jobs, in making plant rules and in changing them, and in promoting and firing workers.

"(2)—The physiological and psychological effects of certain types of assembly line work.

"(3)—The tendency throughout industry to organize work and pay scales in such a way as to set the individual worker against his fellow workers or to isolate him from them.

"(4)—The economic insecurity of the worker."

The solution to our present problems in industrial relations is to make the worker an actual participating member of the industrial community in which he works and lives; to create in him a pride of ownership in his business. Emphasis is placed on team work rather than individualism in attaining this feeling of pride of ownership.

Mr. Drucker indicates that to tell a team generally what is to be done and let it have the responsibility of working out the details of how it is to be done, creating team rather than individual competition, will go much farther toward making the individuals on that industrial team active participants in their industrial community than to outline step by step the method in which the particular job is to be done. This will provide each industrial worker an opportunity to test his qualities of leadership and to participate in the government of his industrial community. It will offer him the satisfaction of his desire for recognition and prestige.

Mr. Drucker points out some of the advantages and disadvantages of incentive wage and profit sharing plans. It is his opinion that only in young industry is there enough room for rapid technological improvements and enough chance for rapid growth of business to permit substantial payments of incentive

wages and workers share in profits over any given period of time. He emphasized the fact that good labor relations are impossible as long as the worker's status in industry is dependent on the benevolence of the management.

Mr. Drucker is a strong advocate of the guaranteed annual wage as a means of providing economic security for the worker and makes some very good suggestions to both management and labor. He states that only a reasonable percentage of the worker's annual wage should be guaranteed and that it should not be established as an insurance against a depression period.

These articles bring new attention to the increasing belief that harmonious industrial relations will be achieved only when fear and distrust of labor toward management, and of management toward labor, is replaced by a mutual faith and understanding.

CHARLES P. McCORMICK

The Way to Industrial Peace. By Peter F. Drucker, Harper's Magazine, November and December 1946, January 1947.

There have been more books and articles written on how to prevent strikes than there have been strikes. But Drucker's series of articles are nevertheless, most welcome.

It is Drucker's stated purpose in his articles to "work at the causes of labor conflict, their diagnosis and control." That's a large order for three magazine articles. But Drucker writes concisely and well and he makes a good start in the direction of his objective.

To Drucker's way of thinking there are four primary causes for labor unrest and industrial conflict. He lists them as one: real or fancied managerial unfairness in plant administration, two: frustration inherent in modern man's work, three: frustration inherent in the organization of work, four: the economic insecurity of the worker.

Having listed the causes Drucker proceeds to offer the cures. To meet the problem of real or fancied managerial unfairness he proposes that management "admit the workers to full and equal partnership and responsibility in all decisions that come up under the union contract or under the rules of the plant." Drucker illustrates this point with case histories of the practical achievements of joint management-worker committees. His cure, simply put, is the encouragement of labor participation in management.

The lack of work satisfaction which today's mass production worker experiences is now pretty well recognized as a source of sure trouble. Drucker suggests that to liquidate this cause of industrial unrest we consider a new kind of work pattern. He calls for reexamination of our mass production principle of disintegrating work into individual motions performed by individual workers. He states that some managements have solved the problem by this approach "instead of having each motion performed separately by one worker, a whole sequence of motions is performed one after the other by one worker." (Time and Motion Study engineers: Before shouting "no—this will ruin plant efficiency," give some thought to the long-run possibilities of getting more and more efficiency through more and more work satisfaction even if we sacrifice some immediate gain in improved work methods.)

Drucker's third point is that work is so organized in our

modern plant that the individual is isolated or is put in opposition to the group. Thus the individual loses the satisfaction of a group relationship and his desire to be a social being is frustrated. This is just another way of saying that man, must have a feeling of belonging. Nothing new in this, of course. It is emphasized at every personnel conference. But it bears repeating. Drucker's solution: Encourage the worker's natural tendency to work as a team. The suggestion here is that work be planned and laid out so that men work in groups. Drucker points to the work of Elton Mayo to prove "the profound importance of team work for human satisfaction, emotion and physical balance and productivity." He then proposes that "the work team should have joint responsibility for such matters as the actual division of work, the arrangement of rest periods, days off, etc."

Let me inject a critical note at this point. Drucker, in his enthusiasm for team work, attacks incentive wage plans that offer bonuses to individual workers. He contends such plans do more harm than good and advocates group incentives as an alternative. It is my feeling that Drucker has gone overboard on this point and that he has arrived at a hasty generalization. There is much to be said for individual incentives and it does not necessarily follow that team work and individual incentives are in conflict.

Drucker presents as the final contributing cause to labor-management warfare the worker's feeling of economic insecurity. He sharply indicts "the whole tendency of industrial thought and action . . . (which) . . . has been to conserve machines and materials rather than to conserve the workers. Machine is regarded as 'capital equipment' which must be maintained in at least reasonable condition even when it is not in use, and must be serviced on a long term basis. Labor, on the other hand, is treated as if it were a raw material—to be bought or not bought as business conditions may warrant." Drucker suggests a two pronged approach to worker insecurity: (1) serious consideration by the individual manager of the annual wage as a means of meeting the problem of seasonal unemployment, (2) an attack on cyclical unemployment through a tax plan which aims at the stimulation of capital investment. The merits of his particular plan are beyond the scope of this review. It is sufficient to note that Drucker is in agreement with the proposition that we will not minimize worker unrest until we minimize the extremes of our booms and busts.

As Drucker admits, his list of "the four prevailing causes of labor conflict" is not new. There is practical unanimity among industrial relations experts that these factors underlie most strike situations. But what is new is that Drucker, the man who wrote "The Concept of the Corporation,"—a student of corporate structure—advocates "labor participation in management." As Drucker himself puts it—we must get management "to see the plant as a social institution in which a worker has to be given citizenship."

Let's face it. The basic problem in labor-management relations for the next decade revolves around the role and function of unions in our society. Either the union will be given an interest and a major role in capitalism or the union will move to supplant capitalism with another system in which they do have a part. The demands for labor-management committees, industry councils, representation on boards of directors—all these are straws in the wind. We are going to have to give serious and profound thought to folding our unions into our industrial

structure. And do it without impairing our productive efficiency. As Drucker states "under modern industrial conditions the union is not an 'outsider.' It is not merely legitimate but necessary to good labor relations."

And if we do find the formula for altering our industrial structure to give the union "partnership status" without undermining our efficiency, there is no industrial relations problem we cannot solve. And what is more we can begin to tackle from the common-welfare-point-of-view such problems as "What is a proper wage-price-profit relationship for the expansion and stability of our economy?"

Drucker puts it well when he states "We have the opportunity today to build a structure of industrial peace and partnership." I am convinced that American ingenuity and initiative can do it. If we do we shall be the first country that succeeded in keeping its labor movement pro-capitalism.

EDWARD T. CHEYFITZ

Employees Are People. By Harry King Tootle. McGraw-Hill Book Company, Inc. 1947. 350 pp.

The author of *Employees Are People* undoubtedly has had many years experience substantiating the truth of the title. He is, it is also apparent, well endowed with a number of attributes basic to success in personnel management: broadmindedness, flexibility, sympathy, a real respect for people, and a sense of

humor. The value and interest of the book are principally in its reflection of these personal characteristics. This reviewer would rank the book high as "random notes" by a personnel executive who had developed a common sense philosophy for his own guidance.

The book is in no sense a manual of good personnel practice for the large or small organization. It is unfortunate that the preface gives the impression that it might be used in this way. Perhaps in an effort to cover in some degree all phases of personnel administration, the author discusses some activities in which he apparently has had little experience. In these his "impressionistic" approach fails him, and his ideas may have no adequate basis and his recommendations be unsound. Also the emphasis given to the various subjects often is not in proportion to their importance.

Employees Are People provides interesting and amusing reading and, in many instances, good advice. The personnel specialist, however, may at times be annoyed by the casualness with which the author treats certain of the most difficult personnel problems, and the beginner in personnel work should be warned not to attempt to use the description of specific activities as guides.

HELEN BAKER.

Industrial Relations Section, Princeton University

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